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THE PLANTS OF EMMET COUNTY, IOWA

B. O. WOLDEN

Emmet County lies in the northwestern part of the state bordering on Minnesota and is one of the smallest counties in Iowa, having an area of only 395 square miles. Space will not permit any lengthy description of the physiography and the geological formations of the county. These are fully treated in the report on the Geology of Emmet, Palo Alto and Pocahontas Counties by the Iowa Geological Survey.¹ The following is the result of the author's study of the plant life of Emmet County, which has extended over a period of many years. During this time all portions of the county have been visited but there are a few interesting localities in the western part which have received special attention. These are places where the native flora, even within the writer's memory, was found in a comparatively undisturbed state. The areas still remaining in somewhat natural condition are mostly woods, high prairie, or marsh. Some of these will be mentioned and briefly described.

The High Lake woods where the author was born and spent his early years are situated in the southern part of the county between High Lake and Mud Lake. Formerly these two lakes with two large ponds encircled this area so as almost to form an island, from which fact was derived the old name of "Island Grove." However, in the course of years these ponds have been filling up and this feature is not as evident as in earlier years. Within the writer's memory this stretch, with the exception of a few clearings, was native timber with some natural meadow and marsh where native vegetation held full sway and ran riot. Many large trees of oak and walnut were left although the largest timber had been cut by early settlers. Most of this is now cleared or pastured and the native flora is each year being confined to more restricted quarters and some of the shy wood wildlings found in early years have now about disappeared. Scattered timber is also found outside of this area, around the many ponds and marshes, but is mostly pastured.

¹ Macbride, Thomas H., *Geology of Emmet, Palo Alto and Pocahontas Counties*, Iowa Geological Survey, Vol. 15, Ann. Rept., pp. 227-276, 1904.

The largest stretch of timber is found to the west and south of Estherville. Here the topography is quite rough with ridges and ravines, some of which are narrow with precipitous sides. The area recently acquired for a state park lies to the west and represents only a small portion of this rugged and rather picturesque timber country. Most of it has been pastured, but not closely enough to destroy the herbaceous wood flora, and several of the rarer wood species are found in the rougher portions southward. A fine piece of timber lies at the east end of Swan Lake. Other smaller stretches, practically all of which are pastured, are found in scattered groves in and around the ravines southward from Estherville; along the west fork of the Des Moines River, with a few places along the east fork; also on the south sides of Iowa Lake, Tuttle Lake, and Swan Lake.

But little virgin prairie is left and this is mostly found on knolls or on land too rough or too gravelly to cultivate. Some such places are found, mostly in Emmet Township and in the southern parts of High Lake and Twelve-Mile Lake townships. In later years however much such land has been enclosed for pasture. Low-land prairie is chiefly represented by roadsides and railroad right-of-ways.

The county was originally dotted with small ponds and marshes and in the east end were extensive peat sloughs. Most of these are long since drained leaving half a dozen lakes which are wholly or partly within the county. Adjoining these are sometimes smaller ponds and marshes which can not be drained without draining the lakes. Several such are found around High Lake and Mud Lake and northeastward to Swan Lake. The hydrophytic vegetation which was once so abundant is now mostly restricted to these lakes and surrounding marshes and to a series of hanging bogs in the western part. No description of the county would be complete, from a botanists point of view, without mention of these bogs which occur at intervals along the Des Moines River from near the state line and southward through the county. Most of them are found in Emmet and Estherville townships. Some are small, only a few rods square and hanging up in the hillsides, while the larger ones are on the lower slopes towards the river but well above the flood plain. Where the bogs are on comparatively level ground the wettest portions are often higher than the drier parts. The depth of the largest bog in Emmet Township was found to be thirteen feet in a spot selected at random. The flora of these bogs is quite

distinct and several typical bog plants otherwise rare or unknown in the state here come within our limits.

The purpose of this paper is chiefly to record the original flora of the county, much of which is still found in these scattered situations, especially in the western part of the county, where the larger proportion of rough land has left a few samples of native forest, prairie, and marsh. In order that it might be of interest to others besides the systematic botanist it was desired to make it more than a mere list of names, which to most people are more or less meaningless. To make it more readable common names are given for most of the plants. Besides brief notes on distribution, abundance, habits, and color forms, the names of localities or places where the less common plants grow are also given, with the hope of adding to the local interest. As every taxonomist knows, species lines are often not very clearly defined and he often runs up against forms which vary from the normal in some respect or other or which are intermediate in character and therefore do not fit the descriptions of the species. An experienced botanist may find it easiest to ignore these, but they are a constant puzzle to beginners and it clarifies the situation somewhat to find them described as varieties or forms. For this reason brief mention is made in this paper of several such forms not described in the manuals, with the hope that this will help others who may at some time encounter similar forms. Most puzzling are some groups in certain genera in which there is so much variation even between individual plants that it is difficult to draw any species lines whatever, and it often becomes a matter almost of individual opinion where among the so-called species a specimen should be placed. We find this in some of the juneberries (*Amelanchier*), hawthorns (*Crataegus*), the red oak group in *Quercus*, and especially in certain groups of the asters. It is well for a beginner to understand this when he attempts to do any work with these genera.

The impulse which started the author on the road to a better knowledge of the plant life among which he had grown up and in which he had been interested since childhood, was the perusal of a local flora of a northeastern Iowa county. He would feel well repaid for any work spent if this paper could awaken in any of our boys and girls an interest in the wild flowers and plants and their preservation, as well as in nature in general.

The flora of Emmet County has had considerable previous attention. Mr. R. I. Cratty, formerly of Armstrong, collected in the

eastern part of the county especially, during what may be called pioneer years when most of the surface of the county was covered with virgin vegetation. The results of his work were recorded in the "Flora of Emmet County, Iowa"² published over twenty-five years ago. Most of the marshes, bogs and prairies, where these early collections were made have now disappeared and undoubtedly many of the aquatic and marsh species recorded by Mr. Cratty can no longer be found within our limits. Mr. Cratty is the author of many other papers on the Iowa flora in which numerous references are made to Emmet County plants. Among others who in earlier years collected in Emmet County and whose published papers contain many references to Emmet County plants are B. Shimek,³ L. H. Pammel,⁴ and T. J. Fitzpatrick.⁵ A number of species not found by the writer but recorded by these collectors, most of them by Mr. Cratty, have been included in this list. Four or five such may be errors and are therefore here recorded as doubtful. When the record is not based on the writer's own material the name of the recorder is given, usually in parentheses. The number of native and introduced species and well marked varieties listed here is about 930 and of this number about 855 have been collected by the writer. Of the total number perhaps a few over 800 are native.

The nomenclature used in this paper is with a few exceptions that of Gray's Manual, seventh edition, partly because that is the work most likely to be used by young students. The names used in the Illustrated Flora, second edition, when different, are given in parentheses. Very likely new editions of these manuals will be forthcoming in the near future and these will no doubt contain changes in nomenclature and in the treatment of certain genera. But since, with the exception of the addition of a few species in recent years, this list was compiled some years ago and has for a number of years been awaiting publication it has not been deemed advisable to further delay its publication by waiting for the revised editions. Dr. Rydberg's newly published Flora of the Prairies and Plains was not yet available when this was submitted for publication.

² Cratty, R. I., Flora of Emmet County, Iowa: Proc. Iowa Acad. Sci., Vol. II, pp. 201-251. 1904.

Flora of Emmet County, Iowa II: Iowa Naturalist, Vol. I. No. 2, pp. 36-38. 1905.

³ Shimek, B. The plant geography of the Lake Okoboji region: Bull. Lab. Nat. Hist., State University of Iowa, New Ser. vol. 95. 1915.

The prairies: Bull. Lab. Nat. Hist., State University of Iowa, vol. 6, No. 2: pp. 169-240. 1911.

⁴ Pammel, L. H., The grasses of Iowa: Part II, Iowa Geol. Survey, Supplementary report. 1903.

⁵ Fitzpatrick, T. J. Manual of the flowering plants of Iowa, 1899.

The Liliales of Iowa: Proc. Ia. Acad. Sci., Vol. 13, pp. 115-160. 1906.

Many other papers by these and other authors contain references to Emmet County plants but nearly all species listed in this work other than those collected by the author are taken from these publications.

The author wishes to acknowledge with grateful thanks assistance rendered by botanists both in Iowa and outside. Special thanks are due to Mr. R. I. Cratty of the Iowa State College for examining numerous specimens, and for much help and information which has always been freely given. Others who have been consulted on various matters are Professor L. H. Pammel of the Iowa State College and Professor H. S. Conard of Grinnell College. Among those outside of the state to whom many doubtful specimens have been sent for examination are Mr. C. A. Weatherby of the Gray Herbarium of Harvard University, Mr. E. H. Wilson of the Arnold Arboretum, Dr. P. A. Rydberg of the New York Botanical Garden, and Dr. Carleton C. Ball and Mrs. Agnes Chase of the Bureau of Plant Industry, Washington, D.C. Some specimens of *Carex* were examined by Mr. Kenneth K. Mackenzie of New York.

PTERIDOPHYTA

Polypodiaceae

Adiantum pedatum L. Maiden-hair Fern. Common in Estherville woods, especially in ravines. Very rare at High Lake.

Asplenium Felix-femina (L.) Bernh. Lady Fern. This, our most common fern, found in woods throughout, has become rare except in Estherville woods.

Aspidium spinulosum var. *intermedium* (Muhl.) D. C. Eaton (*Dryopteris intermedia* (Muhl.) Gray.) American Shield Fern. Very rare in High Lake and Estherville woods.

Cystopteris fragilis (L.) Bernh. (*Filix fragilis* (L.) Underw.) Brittle Fern. In woods, Estherville, High Lake, and probably other places.

Onoclea sensibilis L. Sensitive Fern. Rare in woods, Estherville, High Lake, Armstrong Grove (Cratty). Stations long since destroyed at High Lake and but few left at Estherville.

Onoclea Struthiopteris (L.) Hoffm. (*Matteuccia Struthiopteris* (L.) Todaro) Ostrich Fern.

In low woods, Estherville, Armstrong Grove (Cratty).

Osmundaceae

Osmunda Claytoniana L. Clayton's Fern.

This beautiful fern is very rare in woods south-west of Estherville.

Ophioglossaceae

Botrychium virginianum (L.) Sw. Rattlesnake Fern. Moonwort. In High Lake and Estherville woods.

Equisetaceae

Equisetum arvense L. Field Horsetail. Common in low or springy ground.

Equisetum fluviatile L. Swamp Horsetail. In marshes.

Equisetum laevigatum A. Br. Prairie Scouring Rush. On dry prairies.

Equisetum kansanum Schaffner. On dry prairies.

Equisetum hyemale L. var. *robustum* (A. Br.) A. A. Eaton. (*E. praealtum*

Raf.) Stout Scouring Rush. Infrequent along sandy banks. Abundant in springy bottom of old gravel pit at Estherville.

SPERMATOPHYTA

Pinaceae

Juniperus virginiana L. Red Cedar. In early days found on high banks of High Lake, Mud Lake, Swan Lake, and Iowa Lake. A few trees are left by Mud and Iowa lakes, otherwise old stumps are the only remaining proof of their occurrence. Young seedlings occur in open woods.

Typhaceae

Typha latifolia L. Cat-tail Flag. Common in marshes.

Sparganiaceae

Sparganium eurycarpum Engelm. Bur-reed. Frequent in marshes and ditches.

Sparganium simplex Huds. Rare in marshes near Armstrong (Cratty).

Najadaceae

Potamogeton natans L. Floating Pond weed. Collected in pond near High Lake in October 1907. Station since destroyed. Des Moines river at Estherville (Cratty).

Potamogeton americanus C. & S. (*P. lonchites* Tuck.) Long-leaved Pond weed. Streams and lakes (Cratty).

Potamogeton amplifolius Tuck. Large-leaved Pondweed. West fork of Des Moines (Cratty).

Potamogeton illinoensis Morong. Streams and lakes (Cratty).

Potamogeton heterophyllus Schreb. Common in marshes (Cratty).

Potamogeton praelongus Wulf. Iowa Lake (Cratty).

Potamogeton Richardsonii (Benn.) Rydb. (*P. perfoliatus* L.) Claspingleaved pond weed. Common in lakes.

Potamogeton zosterifolius Schum. Iowa Lake (Cratty).

Potamogeton Friesii Rupr. High and Mud lakes, Iowa Lake (Cratty).

Potamogeton pusillus L. High and Mud lakes.

Potamogeton foliosus Raf. Lakes and streams (Cratty).

Potamogeton foliosus var. *niagarensis* (Tuck.) Morong. Des Moines River, Estherville (Cratty).

Potamogeton pectinatus L. Fennel-leaved Pondweed. Common in lakes.

Zannichellia palustris L. Horned Pondweed. In creek in Emmet Township.

Najas flexilis (Willd.) R. & S. Common in shallow water in lakes.

Juncaginaceae

Scheuchzeria palustris L. Mr. Cratty records this as "Very rare, bog three miles northwest of Armstrong, the only known locality in the state."

Triglochin maritima L. Arrow Grass. Locally common in bogs along west side of Des Moines river in Emmet township. Also recorded from east part of county by Mr. Cratty.

Triglochin palustris L. This species of arrow grass is found in bogs in Emmet township. As far as the writer has been able to ascertain it has not been found elsewhere in the state.

Alismaceae

Sagittaria latifolia Willd. Arrow-head. Common in mud and shallow water.

Sagittaria arifolia Nutt. (*S. cuneata* Sheldon) Common in marshes and around margins of ponds.

Sagittaria cristata Engelm. (Not in Gray) "The type of this rare species was discovered in 1881 in a small lake east of Armstrong. The station has since been destroyed but the plant occurs in several localities in Minnesota." — Cratty.

Lophotocarpus calycinus (Engelm.) J. G. Small. In ponds and marshes around High Lake; also in Swan Lake, Four-mile Lake and perhaps other lakes. Previously known only from the eastern part of the state.

Alisma Plantago-aquatica L. Water Plantain. Common in shallow water and in ditches.

Hydrocharitaceae

Elodea canadensis Michx. (*Philotria canadensis* (Michx.) Britt.) Waterweed, Ditch-moss. (Cratty).

Vallisneria spiralis L. Eel-grass. Once frequent in lakes, but rarely observed now.

Gramineae

Andropogon scoparius Michx. (*Schizachyrium scoparius* (Michx.) Nash) Little Blue-stem. On dry prairies.

Andropogon furcatus Muhl. Big Blue-stem. Common and valuable prairie grass.

Andropogon tennesseensis Scribn. Dry prairie, Emmet. (Not in Gray or Ill. Flora).

Sorghastrum nutans (L.) Nash. Indian Grass. Frequent on dry prairies.

Digitaria humifusa Pers. (*Syntherisma Ischaemum* (Schreb.) Nash.) Small Crab-grass. Common in pastures and waste ground.

Digitaria sanguinalis (L.) Scop. (*Syntherisma sanguinalis* (L.) Dulac) Large Crab-grass. An introduced grass common in cultivated and waste ground.

Panicum capillare L. Old-witch-Grass. A common weed in fields and gardens.

Panicum Gattingeri Nash. Armstrong (Pammel & Cratty).

Panicum dichotomiflorum Michx. Along Des Moines river, High Lake.

Panicum virgatum L. Switch Grass. Common on prairies.

Panicum depauperatum Muhl. "Dry ground, woods and prairies; rare" — Cratty.

Panicum perlongum Nash. Dry prairie, Twelve Mile Lake. Determined by A. S. Hitchcock.

Panicum dichotomum L. Dry knolls. (Cratty).

Panicum huachucae Ashe. (*P. unciphyllum* Trin.) Armstrong (Pammel).

Panicum implicatum Scribn. Low wet meadows around High Lake. Specimens determined by Mrs. Chase.

Panicum praecocius Hitchc. & Chase. Dry prairie, Twelve Mile Lake.

Panicum Scribnerianum Nash. Common on dry prairies and knolls.

Panicum Leibergii (Vasey) Scribn. In meadows near High Lake.

Panicum Wilcoxianum Vasey. Dry prairies, Estherville.

Echinochloa crusgalli (L.) Beauv. Barnyard-grass. A common introduced weed.

Echinochloa Walteri (Pursh) Nash. (Cratty).

Setaria glauca (L.) Beauv. (*Chaetochloa glauca* (L.) Scribn.) Yellow Fox-tail. Introduced weed.

- Setaria verticillata* (L.) Beauv. (*Chaetochloa*, Scribn.) Bristly Fox-tail.
An introduced weed frequent in waste ground around Estherville. The
bristly heads cling to clothes with which they come in contact.
- Setaria viridis* (L.) Beauv. (*Chaetochloa*, Scribn.) Green Fox-tail. Intro-
duced weed.
- Cenchrus pauciflorus* Benth. (*C. carolinianus* of manuals). Sand-bur. A
pernicious weed at present mostly confined to vicinity of railroad tracks
and lake shores. Estherville, Wallingford, and shores of Turtle Lake
and Swan Lake.
- Zizania palustris* L. wild Rice. In marshes and shallow ponds.
- Leersia virginica* Willd. (*Homalocenchrus virginicus* (Willd.) Britt. White
Cut-grass. Common, low woods.
- Leersia oryzoides* (L.) Sw. (*Homalocenchrus oryzoides* (L.) Poll.) Rice
Cut-grass. Common in marshes.
- Phalaris arundinacea* L. Reed Canary-grass. Infrequent in marshes.
- Hierochloa odorata* (L.) Wahlenb. (*Savastana odorata* (L.) Scribn.) Sweet
Vernal Grass. Vanilla Grass. Common in low-ground.
- Oryzopsis racemosa* (Sm.) Ricker. Black-fruited Mountain Rice. Frequent
in woods.
- Stipa viridula* Trin. Green Stipa. This grass which is not considered to be
native in Iowa has been growing quite profusely along banks of High
Lake as long as the author can remember. Also occurs on high wooded
bank north east side of Swan Lake.
- Stipa spartea* Trin. Porcupine Grass. Common on high prairies.
- Aristida longiseta* Steud. On high prairie, western part of Emmet Town-
ship.
- Muhlenbergia sylvatica* Torr. Woodland Dropseed. Open woods.
- Muhlenbergia mexicana* (L.) Trin. Mexican Dropseed. Common in or
around cultivated ground.
- Muhlenbergia racemosa* (Michx.) B. S. P. Marsh Muhlenbergia. Common
in low ground.
- Brachyelytrum erectum* (Schreb.) Beauv. Frequent in woods. High Lake,
Estherville.
- Phleum pratense* L. Timothy. Everywhere common.
- Alopecurus geniculatus* L. var. *aristulatus* Torr. (*A. aristulatus* Michx.)
Marsh Foxtail. Common in marshes and ditches.
- Sporobolus asper* (Michx.) Kunth. Rush-grass. Banks of Iowa Lake; near
Des Moines River, in High Lake Township and at Estherville.
- Sporobolus brevifolius* (Nutt.) Scribn. (*Muhlenbergia cuspidata* (Torr.)
Nash.) Prairie Rush-grass. High prairie knolls, Emmet. "Common on
dry knolls" — Cratty.
- Sporobolus vaginiflorus* (Torr.) Wood. Along Des Moines River, High
Lake.
- Sporobolus neglectus* Nash. Common in pastures.
- Sporobolus cryptandrus* (Torr.) Gray. Sand Dropseed. In sand, shores of
Tuttle Lake. Also east bank of Iowa Lake and banks of Des Moines
river at Estherville (Cratty).
- Sporobolus heterolepis* Gray. Bunch-grass, Wire-grass. A valuable high
prairie grass.
- Agrostis alba* L. Red-top. A naturalized grass.
- Agrostis hyemalis* (Walt.) B. S. P. Hair grass. Common on low prairies.

- Agrostis perennans* (Walt.) Tuck. In dry soil, Armstrong (Cratty).
- Calamovilfa longifolia* (Hook.) Hock. Mr. Cratty found this grass "Just south of state line on road to Iowa Lake from the south."
- Calamagrostis canadensis* (Michx.) Beauv. Blue-joint Grass. Frequent in wet soil.
- Calamagrostis inexpansa* Gray. Frequent in low ground.
- Calamagrostis Macouniana* Vasey. (Not in Gray) In marshes around High Lake.
- Cinna arundinacea* L. Wood Reed-grass. Wet ground in woods; throughout but not common.
- Sphenopholis obtusata* (Michx.) Scribn. (*Eatonia obtusata* (Michx.) Gray) Common on dry prairies.
- Sphenopholis pallens* (Spreng.) Scribn. (*Eatonia pennsylvanica* (D. C.) A. Gray.) Low ground.
- Sphenopholis pallens* var. *major* (Torr.) Scribn. "Infrequent in low places" — Cratty.
- Koeleria cristata* (L.) Oers. Common on high prairies.
- Spartina Michauxiana* Hitchc. Sloughgrass. Low prairies and marshes; common.
- Beckmannia erucaeformis* (L.) Host. In marshes and along water-courses.
- Boutelous oligostachya* (Nutt.) Torr. Grama-grass. On dry ridges along Des Moines River.
- Bouteloua hirsuta* Lag. Hairy Mesquite-grass. On gravelly knolls and ridges along Des Moines River, in High Lake, Estherville, and Emmet.
- Bouteloua curtipendula* (Michx.) Torr. (*Antheropogon curtipendulus* (Michx.) Fourn.) Tall Gramma-grass. Common on high prairies.
- Phragmites communis* Trin. (*Phragmites Phragmites* (L.) Karst.) Reed-grass. Our largest grass, common in marshes.
- Eragrostis hypnoides* (Lam.) B. S. P. Creeping Love-grass. Common along river banks.
- Eragrostis Frankii* Steud. High Lake (perhaps introduced). North Shore of Iowa Lake (Cratty).
- Eragrostis pilosa* (L.) Beauv. Lake shores, roadsides.
- Eragrostis Purshii* Schrad. Estherville, Armstrong (Cratty).
- Eragrostis megastachya* (Koeler.) Link (*E. Major* Host.) Candy Grass. Common introduced weed.
- Dactylis glomerata* L. Orchard Grass. An introduced grass, common in orchards and near dwellings.
- Poa compressa* L. Woods and prairies.
- Poa triflora* Gilib. False Red-top. Frequent, low woods and prairies.
- Poa pratensis* L. Kentucky Blue Grass. Common everywhere.
- Poa sylvestris* Gray. Sylvan Spear-grass. Frequent in woods.
- Scholochloa festucacea* (Willd.) Link. Sprangle-top. Frequent in marshes.
- Glyceria nervata* (Willd. Trin. (*Panicularia nervata* (Willd.) Kuntze.) Nerved Manna-grass. Common in wet ground.
- Glyceria grandis* Wats. (*Panicularia grandis* (Wats.) Nash.) Reed Meadow-grass. Common in marshes.
- Glyceria septentrionalis* Hitchc. (*Panicularia Bickn.*) Floating Manna-grass. In marshes (Pammel & Cratty).
- Glyceria borealis* (Nash.) Batch. (*Panicularia* Nash.) Along water courses, Four-mile Lake, Armstrong (Cratty).

- Festuca octoflora* Walt. Slender Fescue-grass. Abundant in old gravel pit north of Graettinger.
- Festuca ovina* L. Sheeps Fescue-grass. Around Oak Hill Cemetery. Perhaps introduced.
- Festuca elatior* L. Meadow Fescue-grass. Introduced around lawns and dwellings.
- Festuca nutans* Spreng. Nodding Fescue-grass. Common in woods.
- Bromus secalinus* L. Chess, Cheat. Introduced. Along railroad tracks and in fields.
- Bromus tectorum* L. Downy Brome-grass. Common along railroad tracks.
- Bromus ciliatus* L. Fringed Brome-grass. In woods (Cratty and Pammel).
- Bromus purgans* L. Hairy Wood Chess. Common in woods.
- Bromus altissimus* Pursh. (*B. purgans* var. *latiglumis* Shear.) Frequent in woods.
- Bromus incanus* (Shear.) Hitchc. (*B. purgans* var. Shear. Woods and prairies.
- Bromus inermis* Leyss. Hungarian Brome-grass. Along roadsides, Estherville.
- Lolium multiflorum* Lam. Awned Rye-grass. Introduced in a few places. High Lake.
- Lolium temulentum* L. Poison Darnel. Introduced. Armstrong (Pammel).
- Agropyron Smithii* Rydb. Western Wheat-grass. Common on dry prairies.
- Agropyron repens* (L.) Beauv. Quack Grass. Occurs in several localities.
- Agropyron tenerum* Vasey. Slender Wheat-grass. Woods and prairies; common.
- Agropyron caninum* (L.) Beauv. Not common, on dry prairies, High Lake, Estherville.
- Agropyron Richardsonii* Schrad. Rare, dry prairie, Emmet.
- Hordeum jubatum* L. Wild Barley. Common and troublesome weed.
- Elymus virginicus* L. Wild Rye. Common, low woods, borders, and river banks.
- Elymus virginicus* var. *hirsutiglumis* (Scribn.) Hitchc. (*E. hirsutiglumis* Scribn.) Along river banks, High Lake, Estherville.
- Elymus virginicus* var. *submuticus* Hook. (*E. curvatus* Piper.) Banks, High Lake.
- Elymus canadensis* L. Canada Lyme-grass. Common. Some forms green and some very glaucous.
- Elymus robustus* Scribn. & J. G. Small. Robust Lyme-grass. A segregate from *E. canadensis* and by many considered only a robust form of that species. Common on low prairies.
- Elymus striatus* Willd. Slender Wild Rye. Open woods and borders.
- Elymus Macounii* Vasey. Estherville.
- Elymus diversiglumis* Scribn. & Ball. Infrequent in woods. High Lake, Estherville (Oak Hill). As far as known to the author this has not been reported from any other place in Iowa.
- Hystrix patula* Moenck. (*H. hystrix* (L.) Millsp.) Bottle-brush Grass. Common in woods.

Cyperaceae

- Cyperus diandrus* Torr. Low Cyperus. Common along sand flats of West Des Moines River.

- Cyperus rivularis* Kunth. Shining Cyperus. Very common; shores of lakes and rivers and in wet ground.
- Cyperus aristatus* Rottb. (*C. inflexus* Muhl.) Awned Cyperus. Common; sandy shores of lakes and streams.
- Cyperus Schweinitzii* Torr. Rather infrequent along lake shores, High Lake, Swan Lake, and Tuttle Lake.
- Cyperus esculentus* L. Common in low cultivated ground near Estherville.
- Cyperus erythrorhizos* Muhl. Common in wet ground, especially around lakes and streams.
- Cyperus ferax* Rich. Muddy shores; common.
- Cyperus strigosus* L. In similar situations as the preceding; common.
- Cyperus strigosus capitatus* Boeckl. (Cratty)
- Eleocharis palustris* (L.) R. & S. Spike Rush. Very common in marshes and on mud.
- Eleocharis palustris* var. *glaucescens* (Willd.) Gray. In low ground.
- Eleocharis acicularis* (L.) R. & S. Needle Spike Rush. Common in wet muddy places.
- Eleocharis Wolffi* Gray. Rare, Armstrong (Cratty).
- Eleocharis tenuis* (Willd.) Schultes. Frequent in bogs, Emmet.
- Scirpus pauciflorus* Lightfoot. Frequent in bog, Emmet.
- Scirpus americanus* Pers. Three-Square Rush. A species with triangular leafless culms here found only in hanging bogs.
- Scirpus validus* Vahl. Great Bulrush. Very common. In marshes and shallow water.
- Scirpus occidentalis* (Wats.) Chase. This species has more slender and firm culms than the preceding, and larger spikelets. In shallow water in lakes and ponds.
- Scirpus heterochaetus* Chase. Very similar to the preceding but with solitary spikelets. Is found with the two preceding species in Four-Mile Lake, and probably in other lakes in the county. According to Mrs. Chase it had not been previously reported from any other place in Iowa.
- Scirpus fluviatilis* (Torr.) Gray. River Bulrush. Common in marshes and shallow ponds.
- Scirpus atrovirens* Muhl. Prairie Bulrush. Common on low prairies and around sloughs.
- Eriophorum tenellum* Nutt. (*E. gracile* var. *paucinervium* Engelm.) Cotton-grass. Rare in marshes. (Cratty).
- Eriophorum angustifolium* Roth. Tall Cotton-grass. In bogs along West Des Moines River. Also east part of county (Cratty).
- Rhynchospora capillacea* Torr. Beaked Rush. Abundant in bogs in Emmet Township. Previously reported only from eastern counties.
- Scleria verticillata* Muhl. Nut-rush. In bogs in Emmet Township. Probably not reported from elsewhere in Iowa.
- Carex scoparia* Schkuhr. Pointed Broom Sedge. On prairie near Estherville (South-east).
- Carex tribuloides* Wahlenb. Blunt Broom Sedge. Low woods, High Lake.
- Carex tribuloides* var. *reducta* Bailey (*C. projecta* Mack) Necklace Sedge. In low woods, High Lake.
- Carex cristata* Schwein. (*C. cristatella* Britton.) Crested Sedge. Frequent in low ground in woods.

- Carex mirabilis* Dewey. (*C. normalis* Mack.) Frequent in low woods, High Lake, Estherville.
- Carex mirabilis* var. *perlonga* Fernald. Low woods, High Lake.
- Carex straminea* Willd. Straw Sedge. "Rare in woods" — Cratty.
- Carex straminea* var. *echinodes* Fernald. In shady ground along meadow, High Lake.
- Carex Bicknellii* Britton. Bicknell's Sedge. Frequent on prairies.
- Carex festucacea* Schkuhr. Fescue Sedge. Common; meadows and prairies.
- Carex festucacea* var. *brevior* (Dewey) Fernald. Frequent on prairies, High Lake, Estherville.
- Carex Bebbii* Olney. Infrequent in marshes.
- Carex sychnocephala* Carey. Shores of Mud Lake and along water course from Mud Lake to Swan Lake. Marsh east of Armstrong (Cratty).
- Carex scirpoides* Schkuhr. (*C. interior* Bailey.) On low prairies and in peat bogs.
- Carex Deweyana* Schwein. Rare; Estherville woods.
- Carex rosea* Schkuhr. Frequent in woods.
- Carex rosea* var. *radiata* Dewey. Woods (Cratty).
- Carex convoluta* Mackenzie (Not in Gray or Ill. Fl.). In woods. Specimens determined by Mr. Kenneth K. Mackenzie.
- Carex sparganioides* Muhl. Infrequent in woods.
- Carex alopecoidea* Tuckerm. Locally common in low woods at Estherville.
- Carex cephaloidea* Dewey. In woods, High Lake and Estherville.
- Carex gravida* Bailey. Frequent; woods and low prairies.
- Carex gravida* var. *laxifolia* Bailey. A large lax form frequent in woods.
- Carex vulpinoidea* Michx. Fox Sedge. Common; low prairies.
- Carex diandra* Schrank. (*C. teretiuscula* Gooden.) In bogs, Estherville, Armstrong (Cratty).
- Carex diandra* var. *ramosa* (Boott.) Fernald. (*C. prairea* Dewey) In bogs, north of Estherville, eastern part of county (Cratty).
- Carex stipata* Muhl. Frequent near water.
- Carex Sartwellii* Dewey. On low prairies.
- Carex stenophylla* Wahlenb. Found for the first time in Iowa at Estherville by Mr. Cratty in 1882. It is still found along railroad right-of-way southeast part of Estherville and also on gravelly knolls in Emmet Township.
- Carex chordorrhiza* L. f. "Bog two and one-half miles north of Armstrong"—Cratty.
- Carex aquatilis* Wahlenb. var. *substrida* Kükenth. Infrequent in bogs in Emmet.
- Carex stricta* Lam. In bogs, Emmet.
- Carex stricta* var. *angustata* (Boott) Bailey. Infrequent, marshes and wet meadows.
- Carex stricta* var. *decora* Bailey. (*C. Haydeni* Dewey) Bogs, Emmet, Armstrong (Cratty).
- Carex polygama* Schkuhr. (*C. Buxbaumii* Wahlenb.) Rare in bogs, Emmet, Armstrong (Cratty).
- Carex gracillima* Schwein. Graceful Sedge. Very rare. In woods near Oak Hill Cemetery, Estherville.
- Carex varia* Muhl. Along wooded banks of High and Mud lakes.

- Carex pennsylvanica* Lam. Common; upland prairies and dry woods and banks.
- Carex pubescens* Muhl. (*C. hirtifolia* Mack.) In ravines in Estherville woods.
- Carex tetanica* Schkuhr. Common in bogs north of Estherville.
- Carex tetanica* var. *Meadii* (Dewey) Bailey. (*C. Meadii* Dewey) Common on prairies.
- Carex limosa* L. Rare. Marshes near Armstrong (Cratty).
- Carex eburnea* Boot. Frequent along dry hillsides in Estherville woods.
- Carex pedunculata* Muhl. Rare. Estherville woods.
- Carex blanda* Dew. This includes both *C. laxiflora* var. *blanda* (Dew.) Boot and var. *varians* Bailey, of Gray's Manual, both forms being represented here. Common in shady ground and very variable.
- Carex grisea* Wahlenb. Gray Sedge. Common in woods at High Lake, Estherville, Iowa Lake (Cratty).
- Carex grisea* var. *angustifolia* Boott. (*C. amphibola* Steud.) Rare; Estherville woods (Cratty).
- Carex Crawei* Dewey. Vary rare. One and one-half miles north-east of Armstrong (Cratty).
- Carex assiniboinensis* W. Boott. Rare. Occurs along south-west banks of Mud Lake, and also in woods at east end of Swan Lake. A northern species the range of which is given in the manuals as northern Minnesota, North Dakota, and Manitoba.
- Carex longirostris* Torr. (*C. Sprenglii* Dewey.) Long-beaked Sedge. Common in woods especially along banks.
- Carex filiformis* L. Frequent in bogs.
- Carex lanuginosa* Michx. Frequent; low prairies.
- Carex trichocarpa* Muhl. Hairy-fruited Sedge. Frequent in low meadow, High Lake; banks of Des Moines, Estherville.
- Carex trichocarpa* var. *aristata* (R. Br.) Bailey (*C. aristata* R. Br.) (*C. atherodes* Spreng.) Awned Sedge. Abundant in marshes in and around High Lake woods; in marsh southwest of Estherville; Armstrong, rare (Cratty).
- Carex riparia* W. Curtis (*C. lacustris* Willd.) Lake-bank Sedge. Frequent in marshes, perhaps throughout. High Lake.
- Carex comosa* Boott. Bristly Sedge. Infrequent in marshes and along lakes and ponds. High Lake, Estherville, Armstrong (Cratty).
- Carex hystericina* Muhl. Porcupine Sedge. In bogs, especially hanging bogs and around springs.
- Carex retrorsa* Schwein. Retrose Sedge. Infrequent; low woods at High Lake and banks of Des Moines River at Estherville; Iowa Lake (Cratty). (Cratty).
- Carex vesicaria* L. var. *monile* Tuck. (*C. monile* Tuck.) Neck-lace Sedge. Rather rare or local in low ground. River bank north of Lincoln street bridge at Estherville; High Lake, Swan Lake, Armstrong (Cratty).
- Carex rostrata* Stokes. Beaked Sedge. In marsh near High Lake; river bank, Estherville.
- Carex lupulina* Muhl. Hop Sedge. Low ground, Iowa Lake (Cratty).

Araceae

- Arisaema triphyllum* (L.) Schott. Jack-in-the-Pulpit. Indian Turnip. Common in woods.

Acorus Calamus L. Sweet Flag. Frequent in marshes and along ditches.

Lemnaceae

Spirodela polyrhiza (L.) Schleid. Duck-weed. Common; floating on water in ponds and slow streams.

Lemna trisulca L. Ivy-leaved Duckweed. Floating on water in ponds and marshes.

Lemna minor L. Lesser Duckweed. Common in ponds and ditches.

Commelinaceae

Tradescantia bracteata Small. Spiderwort. Common on prairies and in grassy woodlands.

Tradescantia occidentalis (Britton) Smyth. Credited to Emmet county by D. G. Deihl.

Pontederiaceae

Heteranthera dubia (Jacq.) MacM. Water Star-grass. Infrequent in shallow water; shores of ponds and lakes.

Juncaceae

Juncus tenuis Willd. Slender Rush. Common; low prairies and in paths or tramped ground.

Juncus Dudleyi Wiegand. Shores of lakes, Swan and High lakes; also in bogs, Emmet.

Juncus balticus Willd. var. *littoralis* Engelm. In low gravelly ground at Estherville; Armstrong (Cratty).

Juncus nodosus L. Infrequent in low ground.

Juncus Torreyi Coville. Not common, low ground.

Luzula campestris (L.) D. C. var. *multiflora* (Ehrh.) Celak. (*Juncoides compestre* (L.) Kuntze) Wood-rush. Woods southwest of Estherville.

Liliaceae

Zygadenus chloranthus Rich. (*Anticlea elegans* (Pursh) Rydb.) Zygadenus. Common on prairies.

Uvularia grandiflora Sm. Bellwort. Frequent in rich woods.

Oakesia sessilifolia (L.) Wats. (*Uvularia* L.) Sessile-leaved Bellwort. Very rare. A patch of this species occurs in High Lake woods which is the only place it has been found in the county.

Allium tricoccum Ait. Wild Leek. Generally rare except in High Lake woods where it is abundant.

Allium cernuum Roth. Nodding Wild Onion. Credited to Emmet county both by Fitzpatrick and Shimek. The author has found only the following species.

Allium stellatum Ker. Prairie Wild Onion. Very common on prairies.

Allium canadense L. Wild garlic. Frequent, low woods and prairies.

Hemerocallis fulva L. Day Lily. An infrequent escape around cemeteries. Ravine near Oak Hill Cemetery, Estherville; High Lake.

Lilium philadelphicum var. *andinum* (Nutt.) Ker. (*L. umbellatum* Pursh) Western Red Lily. Frequent on prairies.

Lilium michiganense Farw. (Not in Gray or Ill. Fl.) Orange-red Lily, Meadow Lily. Our species of meadow lily has been referred to either *L. canadense* or *L. superbum* in all older Iowa lists. It grows in low woods and meadows and on low prairies.

Erythronium albidum Nutt. White Dog's-tooth Violet. Very common in low woods.

Asparagus officinalis L. Asparagus. Escaped from cultivation.

Smilacina racemosa (L.) Desf. (*Vagnera* Morong.) False Spikenard. Common in woods.

Smilacina stellata (L.) Desf. (*Vagnera* Morong.) Star-flowered False Solomon's Seal. Very common along banks and borders of woods.

Maianthemum canadense Desf. var. *interius* Fernald. (*Unifolium* Greene) False Lily-of-the-Valley. Infrequent and local in woods south-west of Estherville.

Polygonatum commutatum (R. & S.) Dietr. Solomon's Seal. Common along borders of woods. A beautiful ornamental plant.

Trillium cernuum L. var. *macranthum* Eames & Wiegand. Nodding Wake-robin. Specimens of our large *Trillium* submitted to Gray Herbarium were placed here. Woods; very common at High Lake.

Trillium declinatum (Gray) Gleason. In earlier works the *Trillium* of this region was referred to *T. erectum* L. and later to *T. declinatum*. All specimens observed by the author have the long filaments of *T. cernuum*.

Trillium nivale Riddell. Early Wake Robin, Snow *Trillium*. Common in Estherville woods.

Smilax herbacea L. Carrion-flower. Common in woods. Ours is mostly the form called *S. lasiocneuron* Hook. but forms with leaves green to glaucous, and pubescent to glabrous beneath are common.

Smilax cecirrhata (Engelm.) Wats. With the preceding and apparently intergrading with it.

Smilax hispida Muhl. Hispid Green Brier. Frequent in woods.

Amaryllidaceae

Hypoxis hirsuta (L.) Coville. Yellow Star-grass. Common on prairies.

Iridaceae

Iris versicolor L. Blue Flag. Common in wet meadows, and around marshes.

The early flowering, cultivated *Iris* is a frequent escape to roadsides and fence rows around cemeteries, where it is very persistent.

Sisyrinchium campestre Bicknell. Blue-eyed Grass. Common on low prairies.

Orchidaceae

Cypripedium parviflorum var. *pubescens* (Willd.) Knight. (*C. pubescens* Willd. *C. hirsutum* auth., not Mill.) Large Yellow Ladies'-slipper. Infrequent in woods south-west of Estherville. Rare at High Lake.

Cypripedium candidum Muhl. Small White Ladies'-slipper. Rare on low prairies and in bogs, High Lake, Estherville and Emmet townships. Probably once more common in eastern part of county. "Frequent" — Cratty.

Cypripedium hirsutum Mill. (*C. reginae* Walt.) Showy Ladies'-slipper. This beautiful species occurred in several places in the Estherville woods in earlier years but it is now found only in two or three places where it probably will not persist much longer.

Orchis spectabilis L. (*Galeorchis* Rydb.) Showy Orchis. A most beautiful and shy wildling once frequent in High Lake woods but now very rare.

Habenaria bracteata (Willd.) R. Br. (*Coeloglossum* Parl.) Long-bracted Orchis. Infrequent in woods, High Lake and Estherville.

Habenaria hyperborea (L.) R. Br. (*Limnorchis* Rydb.) Tall Green Orchis. In bogs west of Des Moines River north of Estherville.

Habenaria leucophaea (Nutt.) Gray. (*Blephariglottis*, Farw.) Prairie White-fringed Orchis. Low prairies; very rare.

Spiranthes cernua (L.) Richard. (*Ibidium* House) Nodding Ladies-tresses. Not infrequent, low meadows and prairies, High Lake and also in bog at Estherville.

Spiranthes Romanzoffiana Cham. (*Ibidium strictum* (Rydb.) House.) Frequent in wet bogs in Emmet, especially in sec. 21. Not known from any other locality in the state.

Liparis Loeselii (L.) Rich. (*Leptorchis* MacM.) Twayblade. In bogs along Des Moines River north of Estherville and at Estherville. A rare plant in Iowa.

Salicaceae

Salix nigra Marsh. Black Willow. Along streams.

Salix amygdaloides Anders. Peach-leaved Willow. Mostly along lake banks.

Salix pentandra L. Bay-leaved Willow. A planted species rarely found as an escape along roadsides in the southern part of the county.

Salix lucida Muhl. Shining Willow. Found in marshes in the northeastern part of the county and along banks of a little creek between Estherville and Wallingford. Leaves are a beautiful glossy green.

Salix fragilis L. Crack Willow. Our introduced willow which has generally been referred to *S. alba vitellina* (L.) Koch. appears to be this species according to Dr. Ball. *Salix alba* (White Willow) may occur planted but has not been seen by the author.

Salix longifolia Muhl. (*S. interior* Rowlee.) Sand-bar Willow. Common along streams and around marshes.

Salix cordata Muhl. Heart-leaved Willow. Common along streams and around marshes.

Salix missouriensis Bebb. Forms of the above may be placed here but this species is not clearly defined.

Salix pedicellaris Pursh. Bog-Willow. A northern species of cold bogs. Bog two miles north of Armstrong (Cratty).

Salix discolor Muhl. Pussy Willow. Occurs as a small shrub in bogs. Otherwise rare.

Salix petiolaris Sm. Slender Willow. Common in wet bogs in Emmet and in similar situations southward along Des Moines River. Also north of Armstrong.

Salix humilis Marsh. Prairie Willow. Infrequent along open wooded ridges. Some specimens have the small globular amounts of *Salix tristis* but have larger leaves.

Salix subsericia (Anders) Schneider. Specimens of a willow growing plentifully in a peat bog in the southern part of High Lake Township, have been referred to this species by Dr. Ball.

Salix rostrata Richards. (*S. Bebbiana* Sarg.) Bebb's Willow. Infrequent in springy ground, hillsides and woods near Estherville; also in bogs. North of Armstrong (Cratty).

Salix candida Flüggé. Sage Willow. Hoary Willow. A hoary little shrub of northern bogs found in the northern counties of Iowa and which here reaches its most western distribution in the state, as far as known. In bogs south-east of Estherville.

Populus alba L. Silver Poplar. Planted and sometimes escaped.

Populus tremuloides Michx. American Aspen. Common in upland woods, west and south of Estherville, and occasionally in other portions of county.

Populus grandidentata Michx. Large-toothed Aspen. Occurs in woods west of Estherville but almost all the larger trees are cut down. A few trees are left in Oak Hill Cemetery where it is to be hoped they will be allowed to remain.

Populus balsamifera L. Balsam Poplar. Trees of forms somewhat intermediate between this species and *P. canadensis* Ait. occur as if native in School Section Creek valley and along the southeast bank of Swan Lake. Also on north-west side of Spirit Lake, in Dickinson County. Mr. C. A. Weatherby of the Gray Herbarium considered specimens sent him as being nearest to *P. balsamifera*.

Populus deltoides Marsh. Cottonwood. Common, banks of lakes and streams.

Juglandaceae

Juglans nigra L. Black Walnut. Frequent in woods, throughout. Many large trees at High Lake in early years.

Carya cordiformis (Wang.) K. Koch. Bitternut. Our only hickory. Frequent in woods. *C. ovata* occurs at West Okoboji, Dickinson County.

Betulaceae

Corylus americana Walt. Hazelnut. Common, especially around edges of woods.

Ostrya virginiana (Mill.) K. Koch. Ironwood. Common, woods and banks.

Betula pendula Roth. European Birch. A few trees escaped near Estherville.

Fagaceae

Quercus macrocarpa Michx. Bur Oak. Common in woods and along the banks and hillsides of our streams. The younger timber growth around the ponds and marshes of the High Lake and Swan Lake locality often consists almost entirely of bur oak. It varies from a large tree 4-5 feet in diameter in rich woods to a straggling shrub a foot or two in height on barren knolls. The latter form, which is mature growth often loaded with acorns, has been called *Q. macrocarpa* var. *depressa* (Nutt.) Eng. Trees felled at High Lake a few years ago were up to 360 years old. The white oak is said to occur at Algona on the south-east and at West Okoboji on the west.

Quercus borealis maxima (Marshall) Ashe. (Formerly called *Q. rubra* L.) Red Oak. Common, especially in upland woods. Estherville, High Lake. Many variations are found in our red oaks, especially at Estherville, both as to size and shape of acorns and cups, as well as of leaves. The writer is inclined to consider some forms as *Q. borealis* Michx. f. (the var. *ambigua* of Gray's Manual.) while others approach the following.
Quercus ellipsoidalis. E. J. Hill. Specimens from Estherville sent to Arnold Arboretum were placed here.

Urticaceae

Ulmus fulva Michx. Slippery or Red Elm. Common in woods.

Ulmus americana L. American or White Elm. Common in woods and along streams.

Ulmus racemosa Thomas (*U. Thomasi* Sarg.) Cork or Rock Elm. A rather

rare tree in this region. A few trees were found near the base of School Section Creek valley, but have recently been cut down. Occasional small trees are found in ravines west of and also along river north of Estherville.

Celtis occidentalis L. Hackberry. Frequent. Very large trees are found near High Lake and in Swan Lake woods.

Celtis occidentalis, var. *crassifolia* (Lam.) Gray. Rough-leaved Hackberry. Estherville, High Lake. A frequent form of the species.

Cannabis sativa L. Hemp. Often escaped near dwellings and in open woods.

Humulus Lupulus L. Hop. Found locally along river and creek banks. Emmet and Estherville.

Morus alba L. Mulberry. A frequent escape in open woods, especially near dwellings. Near Wallingford, east fork of Des Moines, and occasionally at Estherville.

Urtica gracilis Ait. Nettle. A common weed in rich ground.

Laportea canadensis (L.) Gaud. (*Urticastrum divaricatum* (L.) Kuntze.) Wood Nettle. Very common in low, rich woods.

Pilea pumila (L.) Gray. Richweed, Clear weed. Common in low woods.

Boehmeria cylindrica (L.) Sw. False Nettle. Rare and local. In low woods south east side of Mud Lake, also at Iowa Lake across the Minnesota line.

Parietaria pennsylvanica Muhl. Pellitory. Frequent along banks and in dry woods.

Santalaceae

Comandra umbellata (L.) Nutt. Bastard Toadflax. Common on dry prairies and ridges. Sometimes referred to *C. Richardsiana* Fernald which is not recognized in Ill. Fl. The superficial rootstalk said to characterize the latter has not been observed here.

Aristolochiaceae

Asarum canadense L. var. *acuminatum* Ashe. (*A. acuminatum* (Ashe.) Bicknell.) Wild Ginger. Very common in ravines west and south of Estherville.

Polygonaceae

Rumex Patientia L. Patience Dock. Roadsides in Ellsworth. Introduced.

Rumex Britannica L. Great Water-Dock. Frequent in marshes.

Rumex crispus L. Curled Dock. Introduced weed. Roadsides and meadows.

Rumex elongatus Guss. Roadsides and meadows.

Rumex mexicanus Meisn. Pale Dock. Roadsides.

Rumex altissimus Wood. Peach-leaved Dock. Common in low ground, especially in alluvial soil.

Rumex persicarioides L. Golden Dock. Common in wet ground or on mud.

Rumex Acetosella L. Sheep Sorrel. Frequent in fields. Introduced.

Polygonum aviculare L. Door-weed. Everywhere around dwellings and in tramped ground.

Polygonum erectum L. Larger Door-weed. With the preceding but less common.

Polygonum ramosissimum Michx. Bushy Knot-weed. Common.

Polygonum camporum Meisn. (B. Shimek)

Polygonum lapathifolium L. (*P. incarnatum* Ell.) (*Persicaria* (Tournef) L.) Pale Persicaria. Common weed in wet fields and near dwellings.

- Polygonum amphibium* L. Water Persicaria. Leaves floating in water. Not common.
- Polygonum amphibium* var. *Hartwrightii* (Gray.) Bissell. (*P. Hartwrightii*) (Gray) Common in bogs.
- Polygonum Muhlenbergii* (Meisn.) Wats. (*Persicaria* Tourn.) Swamp Persicaria. Common in sloughs and on low prairies.
- Polygonum pennsylvanicum* L. (*Persicaria* Tourn.) Pennsylvania Smart-weed. Common in low fields.
- Polygonum Hydropiper* L. (*Persicaria* Tourn.) Smart-weed. Common in wet ground.
- Polygonum acre* HBK. (*Persicaria punctata* (Ell.) Sm. Water Smart-weed. With the preceding in wet ground.
- Polygonum Persicaria* L. (*Persicaria* Tourn.) Lady's Thumb. Introduced around barnyards and in waste ground.
- Polygonum virginianum* L. (*Tovara virginiana* (L.) Raf.) Virginia Knot-weed. A rare species here. Grows along banks of Mud Lake.
- Polygonum convolvulus* L. (*Tinaria Convolvulus* (L.) W. & M.) Black Bindweed. A bad introduced weed in fields.
- Polygonum scandens* L. (*Tinaria scandens* (L.) Small) Climbing False Buckwheat. Common in woods and thickets.

Chenopodiaceae

- Kochia Scoparia* (L.) Schrad. var. *trichophylla* Bailey. Kochia. A frequent escape along back streets and in waste ground, Estherville.
- Chenopodium rubrum* L. Coast Blite, Red Goosefoot. Common in marshes; High Lake, Emmet.
- Chenopodium glaucum* L. Oak-leaved Goosefoot. Shores of lakes; Swan Lake, High Lake.
- Chenopodium hybridum* L. Maple-leaved Goosefoot. A common weed. Woods and groves.
- Chenopodium album* L. Lamb's Quarters, Pig-weed. Introduced weed. Fields and waste ground.
- Chenopodium murale* L. Introduced, woods near Estherville.
- Chenopodium polyspermum* L. Introduced, greenhouse grounds, Estherville.
- Chenopodium Boscianum* Moq. Woods, common.
- Chenopodium leptophyllum* Nutt. Dry soil, Estherville, Determined by Dr. Rydberg.
- Atriplex rosea* L. Introduced in pasture, Ellsworth.
- Atriplex patula* L. Orache. Streets and waste ground in towns. Estherville, Wallingford. Introduced.
- Atriplex patula* var. *hastata* (L.) Gray. Along river bank, Estherville.
- Salsola Kali* L. var. *tenuifolia*. G. F. W. Mey. (*S. pestifer* A. Nelson) Russian Thistle. Common around Estherville in gravelly soil.

Amaranthaceae

- Amaranthus retroflexus* L. Pig-weed. Introduced weed.
- Amaranthus graecizans* L. Tumble-weed. Common weed.
- Amaranthus blitoides* Wats. Tumble-weed. Very common in barnyards.
- Acnida tamariscina* (Nutt.) Wood. Water Hemp. In rich waste ground and around marshes.

Nyctaginaceae

- Oxyhaphus nyctagineus* (Michx.) Sweet. (*Allionia nyctagenia* Michx.) Wild Four-O'clock. Common in cultivated ground.
Oxybaphus hirsutus (Pursh) Sweet. (*Allionia hirsuta* Pursh.) Hairy Umbrella-wort. Rare. (Cratty).
Oxybaphus albidus (Walt.) Sweet. (*Allionia* Walt.) Infrequent; dry prairies. Specimens determined by C. A. Weatherby.

Aizoaceae

- Mollugo verticillata* L. Carpet Weed. Shores of Tuttle Lake.

Caryophyllaceae

- Arenaria lateriflora* L. (*Moehringia* Fenzl.) Sandwort. Infrequent in dry upland woods southwest of Estherville.
Arenaria serpyllifolia L. On dry wooded ridge southwest part of Estherville. Introduced.
Stellaria longifolia Muhl. (*Alsine longifolia* (Muhl.) Britt.) Long-leaved Stitchwort. Common in wet shady ground.
Stellaria media (L.) Cyrill. (*Alsine* L.) Common Chickweed. Common in lawns in Estherville and in wet ground in the vicinity. Introduced.
Stellaria graminea L. (*Alsine* Britton) Introduced. Oak Hill cemetery.
Cerastium nutans Raf. (*C. longipedunculatum* Muhl.) Nodding chickweed. Estherville woods. Introduced.
Cerastium vulgatum L. Mouse-ear Chickweed. Low woods and pastures. Estherville, High Lake, Armstrong (Cratty). Introduced.
Agrostemma Githago L. Corn Cockle. Occasionally in grain fields. Introduced.
Lychnis alba Mill. White Campion. Introduced in fields and along roadsides.
Silene intirrhina L. Sleepy Catchfly. Waste ground; frequent.
Silene noctiflora L. Night-flowering Campion. Waste places. Introduced.
Silene stellata (L.) Ait. Starry Campion. Common in woods and along borders.
Silene Cserei Baumg. (Not in Gray or Ill. Fl.) In October of 1925 a species of *Silene* was observed growing in waste ground along Rock Island tracks south of Estherville. A specimen sent to the Gray Herbarium was identified by Mr. Weatherby as being this species. This is a species of southeastern Europe which was found for the first time in this country in a similar situation in Ohio, earlier in the summer.
Saponaria officinalis L. Soapwort. Bouncing Bet. Escaped from cultivation around cemeteries and along roadsides.
Saponaria Vaccaria L. (*Vaccaria* Britton.) Cow-herb. Adventive in wheat fields. (Cratty).

Portulacaceae

- Portulaca oleracea* L. Purslane. Weed in cultivated ground. Introduced.

Ceratophyllaceae

- Ceratophyllum demersum* L. Hornwort. In shallow water, High Lake, September 1917.

Nymphaeaceae

- Nymphaea advena* Ait. Yellow Pond Lily. Formerly found in most ponds and lakes, but is now scarce. Perhaps most plentiful in "Long Lake," High Lake Township.

Castalia tuberosa (Paine) Greene. White Water Lily. Rare in lakes. The only locality observed by the writer in recent years is Iowa Lake. Once common.

Ranunculaceae

Ranunculus circinatus Sibth. (*Batrachium circinatum* (Sibth.) Rehb.) White Water Crowfoot. Rare. "In a pond along old C. M. & St. P. R. R. Estherville." -- Cratty. In a prairie pond in southern part of High Lake Township in June 1909. Pond since drained. In West Okoboji, Dickinson County.

Ranunculus Cymbalaria Pursh. (*Halerpestes* Greene) Seaside Crowfoot. Frequent on wet prairies and around marshes.

Ranunculus delphinifolius Torr. Yellow Water Crowfoot. Frequent in shallow water in marshes.

Ranunculus rhomboideus Goldie (*R. ovalis* Raf.) Early Prairie Crowfoot. Common on prairies in early spring.

Ranunculus sceleratus L. Cursed Crowfoot. Common, edges of ponds and ditches.

Ranunculus abortivus L. Kidney-leaved Crowfoot. Common in woods.

Ranunculus septentrionalis Poir. Buttercup. Our handsomest species. Common, low woods and prairies.

Ranunculus pennsylvanicus L. f. Bristly Crowfoot. A weed-like species frequent in low ground.

Ranunculus acris L. Introduced; rare. (Miss Hayden).

Thalictrum dasycarpum Fisch. & Lall. Tall Meadow-rue. Common, borders and prairies.

Anemonella thalictroides (L.) Spach. (*Syndesmon* Hoffmg.) Rue-anemone. Not common; in woods south-west of Estherville. A dainty plant.

Hepatica acutiloba D. C. Hepatica. Liverleaf. Very common in wooded ravines west and south of Estherville.

Anemone patens L. var. *Wolfgangiana* (Bess.) Koch. (*Pulsatilla patens* (L.) Mill.) Pasque Flower. Common on high prairies in earliest spring.

Anemone cylindrica Gray. Long-fruited Anemone. Frequent, open woods and prairies.

Anemone virginiana L. Tall Anemone. Frequent in woods.

Anemone canadensis L. White Anemone. Common, open woods and prairies.

Anemone quinquefolia L. Wood Anemone. Windflower. One of our most delicate wood flowers. Once locally common in High Lake woods, but its haunts have been destroyed and it is now rare. Rare in woods southwest of Estherville.

Clematis virginiana L. Virgins Bower. Infrequent along wooded banks and borders, High Lake, Estherville.

Isopyrum biternatum (Raf.) T. & G. False Rue-Anemone. Common in most woods.

Caltha palustris L. Marsh Marigold. Generally common in marshes and springy ground along the flood-plain of Des Moines River, and in bogs in Emmet Township.

Aquilegia canadensis L. Wild Columbine. Common in woods, especially along banks.

Delphinium Penardi Huth. (*D. virescens* Nutt. in Ill. Fl.) Prairie Larkspur. Common on prairies.

Actaea rubra (Ait.) Willd. Red Baneberry. Frequent in woods. Berries red.

Actaea rubra forma *neglecta* Gillman. (*A. neglecta* Gillman. *A. eburnea* Rydb.) This is a form with white berries. Frequent in woods.
Actaea alba (L.) Mill. White Baneberry. Credited to Emmet County by Fitzpatrick and Shimek. All the white-berried plants seen by the author have belonged to the preceeding species.

Menispermaceae

Menispermum canadense L. Moonseed. A large-leaved climber frequent in woods.

Berberidaceae

Caulophyllum thalictroides (L.) Michx. Blue Cohosh. In woods; common at High Lake, Estherville.

Papaveraceae

Sanguinaria canadensis L. Bloodroot. Common in woods.

Fumariaceae

Dicentra Cucullaria (L.) Bernh. (*Bicuculla* Millsp.) Dutchman's Breeches. Common in woods.

Corydalis micrantha (Engelm.) Gray (*Capnoides* Britt.) Small-flowered Corydalis. Frequent in dry fields and woods.

Cruciferae

Draba caroliniana Walt. Whitlow-grass. Plentiful in old gravel pit in High Lake township, north of Graettinger. Possibly introduced.

Berteroa incana (L.) D C. Hoary Alyssum. Introduced. M. & St. L. tracks near Estherville.

Alyssum alyssoides L. Yellow Alyssum. Introduced, Oak Hill cemetery.

Thlaspi arvense L. Penny Cress. Along roadsides, High Lake. Introduced.

Lepidium virginicum L. Wild Pepper-grass. In waste places.

Lepidium apetalum Willd. (*L. densiflorum* Schrod. in Ill. Fl.) A common weed.

Lepidium campestre (L.) R. Br. Field Cress. Introduced in timothy fields and waste ground near Estherville.

Capsella Bursa-pastoris (L.) Medic. (*Bursa* Britt.) Shepherds Purse. Common weed, introduced.

Camelina sativa (L.) Crantz. False Flax. Adventive in flax fields.

Brassica arvensis (L.) Kuntze (*Sinapis* L.) Charlock. Common in grain fields.

Brassica juncea (L.) Cosson. Indian Mustard. Introduced.

Brassica nigra (L.) Koch. Black Mustard. Common introduced weed.

Brassica napus L. Rape. Often occurs as an escape along roadsides.

Diplotaxis muralis (L.) D. C. Sand Rocket. In gravelly ground along Rock Island tracks, south part of Estherville. Adventive from Europe.

Conringia orientalis (L.) Dumort. Hares-ear Mustard. Introduced near dwellings. High Lake, Estherville.

Sisymbrium officinale (L.) Scop. var. *leiocarpum* DC. Hedge Mustard. Introduced weed. Very common.

Sisymbrium altissimum L. (*Norta altissima* (L.) Britt.) Tall Sisymbrium. In waste ground around Estherville. Introduced.

Sisymbrium incisum Engelm. (*Sophia* Greene.) Tansy Mustard. (Cratty).

- Sisymbrium canescens* Nutt. var. *brachycarpon* (Rich.) Wats. (*Sophia pinata* (Walt.) Howell). Common in dry or gravelly ground.
- Erysimum cheiranthoides* L. (*Cheirenia* Link.) Worm-seed Mustard. Frequent along wooded banks.
- Erysimum parviflorum* Nutt. (*Cheirenea inconspicua* (S. Wats.) Britton) Prairie Rocket. Frequent in gravelly ground around Estherville. Also prairies, north of Wallingford. A form with much larger flowers approaching *E. asperum* D. C. has been collected along M. & St. L. tracks south-east part of Estherville.
- Rorippa amphibia* (L.) Bess. Along banks of Des Moines River, Emmet Introduced.
- Radicula palustris* (L.) Moench. (*Roripa* Bess.) Marsh Cress. Common in wet fields and marshes.
- Radicula palustris* var. *hispida* (Desv.) Robinson. (*Roripa hispida* Britton) With the type but less common.
- Radicula Armoracia* (L.) Robinson. Horseradish. A frequent escape from cultivation.
- Barbarea vulgaris* R. Br. (*B. Barbarea* MacM.) Winter Cress. Yellow Rocket. In sandy soil, Estherville, Emmet. Introduced.
- Dentaria laciniata* Muhl. Pepper-root. Common in rich woods. A very variable plant. A slender upright form with smaller flowers and with six leaves instead of three is locally common in High Lake woods.
- Cardamine bulbosa* (Schreb.) B. S. P. Spring Cress. Frequent along water courses.
- Cardamine parviflora* L. Bitter Cress. Frequent in woods, High Lake, Estherville, Iowa Lake (Cratty.)
- Cardamine pennsylvanica* Muhl. Bitter Cress. Near streams and water courses. Banks of Des Moines River, Estherville and High Lake. Also at Mud Lake.
- Arabis dentata* T. & G. Toothed Rock-cress. In woods. Frequent along lake banks, High Lake, Estherville, Iowa Lake (Cratty.)
- Arabis brachycarpa* (T. & G.) Britton. Purple Rock-cress. Common in sandy ground south-east side of Tuttle Lake.
- Arabis hirsuta* (L.) Scop. Hairy Rock-cress. Woods and banks, High Lake, Estherville.
- Arabis canadensis* L. Sickie-Pod. Frequent in Estherville woods.

Capparidaceae

- Polanisia graveolens* Raf. Clammy-weed. Frequent along sandy lake shores.
- Polanisia trachysperma* T. & G. Large-flowered Clammy-weed. In similar situations but not common.

Crassulaceae

- Penthorum sedoides* L. Ditch Stonecrop. Frequent in wet seasons around marshes and in ditches.
- Sedum purpureum* Tausch. (*S. triphyllum* (How.) S. F. Gray.) Orpine. Live-forever. Sometimes established around cemeteries, especially at Estherville.

Saxifragaceae

- Heuchera hispida* Pursh. Alum-root. Infrequent on dry prairies.
- Parnassia caroliniana* Michx. Grass of Parnassus. Once common on low

prairies, according to Mr. Cratty. Now restricted to peat bogs, Emmet and Estherville townships.

Ribes Cynosbati L. (*Grossularia* Mill.) Prickly Gooseberry. In Estherville woods, where it takes the place of the following species which is the common gooseberry throughout.

Ribes gracile Michx. (*Grossularia Missouriensis* (Nutt.) Cov. & Britt.) Missouri Gooseberry. Very common in woods.

Ribes floridum L. Her. (*R. americanum* Mill.) Wild Black Current. Common in low woods, and along fence rows.

Ribes odoratum Wended. (*R. aureum* Pursh.) Sometimes persists along roadsides near dwellings.

Rosaceae

Spiraea salicifolia L. (*Spiraea alba* Du Roi in Ill. Fl.) Western Meadow-sweet. According to Mr. Cratty this little shrub was once common on prairies. It is now very rare at least in western part of county.

Pyrus ioensis (Wood.) Bailey. Western Crab-Apple. Common in thickets around lakes and ponds in the western part of county and in Estherville woods. Two color forms are evident, one light pink and the other deep pink.

Pyrus Malus L. (*Malus* Britton.) Common Apple. Seedlings of the cultivated apple frequently appear in ravines and along roadsides in woods, especially in the Estherville vicinity. A few trees, typical *Pyrus baccata* L. (Siberian Crab) are also found.

Amelanchier humilis Wieg. Juneberry. Our Juneberries present a large number of forms which have not been satisfactorily worked out. Specimens representing different forms, collected at Estherville, Mud Lake, Swan Lake, and west of Armstrong, were sent to Mr. Weatherby of the Gray Herbarium of Harvard, and to Dr. Rydberg of the New York Botanical Garden, and also to Dr. Wiegand of Cornell University. These were all called *A. humilis* but as ours grow much larger than *A. humilis* of the east Dr. Wiegand designates the form found from Wisconsin to Nebraska as the western form. There is much variation in shape of leaves, size of petals, as well as in other respects. Estherville specimens have petals up to 12 mm. long, while a very small flowered form has petals only 6 mm. long. This is the Juneberry found along the higher banks of almost all our lakes and streams throughout the county and is common on the high ridges of the Estherville woods.

Amelanchier canadensis x *humilis* (western form). Specimens thus designated by Dr. Wiegand were from a cluster of trees on a high ridge near Estherville, the largest of which has a diameter of six inches at base.

Amelanchier sanguinea (Pursh.) D. C. This is a round-leaved form growing near the tops of high slopes in the Estherville woods. Referring to a specimen of this Dr. Wiegand stated that it "seems almost identical with our New York State forms of *A. sanguinea*." Placing them in these three groups is only a tentative disposition of our Juneberries for the present. It is doubtful if the name *humilis* can be retained for both the eastern and midwestern forms of the first group.¹

¹ See Kelley, A. P. Studies in Iowa Plant Life, Univ. of Iowa Studies, Vol. XIII, No. 5, 1931.

- Crataegus punctata* Jacq. Hawthorn, Thornapple. In woods and thickets. Our most common species and very ornamental when in bloom.
- Crataegus rotundifolia* Moench. var. *chrysocarpa* (Ashe.) Eggleston. (*C. chrysocarpa* Ashe.) Round-leaved Thornapple. East fork of Des Moines River near Armstrong; Tuttle Lake and Estherville.
- Crataegus pubifolia* Ashe. Along south bank of Swan Lake. Similar to the preceding.
- Crataegus macracantha* Lodd. Long-spined Thornapple. In Estherville woods. Very variable. Our thornapples have been much confused in the manuals and it is very difficult to separate them into the different species which have been segregated from the older recognized species. Specimens of this and the two preceding have been determined by E. H. Wilson of the Arnold Arboretum, Harvard University. Other forms have been under observation and may prove to be additional species.
- Crataegus mollis* (T. & G.) Schule. Red-fruited Thornapple. Common in woods. Our largest fruited species; blooms about two weeks earlier than *C. punctata*.
- Fragaria virginiana* Duchesn var. *illinoensis* (Prince) Gray. (*F. Grayana* Vilmorin) Meadow Strawberry. On prairies and in open ground.
- Fragaria vesca* L. var. *americana* Porter. (*F. americana* Britt.) Wood Strawberry. Frequent in woods.
- Potentilla arguta* Pursh. (*Drymocallis agrimonioides* (Pursh.) Rydb. Prairie Cinquefoil. Frequent on dry prairies.
- Potentilla monspeliensis* L. Rough Cinquefoil. Common; low ground, fields.
- Potentilla rivalis* Nutt. var. *pentandra* (Engelm.) Wats. (*P. pentandra* Engelm.) Along watercourses and in marshes. Estherville, High Lake.
- Potentilla rivalis* var. *millegrana* (Engelm.) Wats. (*P. millegrana* Engelm.) Frequent. Tuttle Lake.
- Potentilla argentea* L. Silvery Cinquefoil. On dry hillside near Estherville.
- Potentilla paradoxa* Nutt. Bushy Cinquefoil. Frequent; shores of lakes and ponds.
- Potentilla palustris* (L.) Scop. (*Comarum* L.) Purple, or Marsh Cinquefoil. "Rare in bogs in the eastern half of the county"—Cratty.
- Potentilla Anserina* L. (*Argentina* Rydb.) Silver Weed. In large drained marsh northwest from Armstrong.
- Potentilla canadensis* L. Common Cinquefoil. Very rare; Sec. 3 High Lake Township, June 1910. Collected once southeast of Armstrong by R. I. Cratty. Grows on dry prairies.
- Geum canadense* Jacq. White Avens. Common in woods.
- Geum strictum* Cut. Yellow Avens. In marsh, western part of Estherville township.
- Geum triflorum* Pursh. (*Sieversia ciliata* (Pursh.) Rydb.) Purple Avens. (B. Shimek.)
- Rubus idaeus* var. *aculeatissimus* (C. A. Mey.) Regel & Tiling. (*R. strigosus* Michx.) wild Red Raspberry. Common in woods.
- Rubus occidentalis* L. Black Raspberry. Frequent in woods. Also in planted groves and fencerows etc.
- Rubus allegheniensis* Porter. (*R. nigrobaccus* Bailey) Blackberry. Common in ravines west of Estherville. (Determined by Dr. Rydberg). Our plant has slightly prickly pedicels.

- Agrimonia gryposepala* Wallr. Agrimony. Common in woods.
Agrimonia striata Michx. On prairie, Emmet. Roots fibrous.
Agrimonia mollis (T. & G.) Britton. Woods. Estherville and Emmet. Roots tuberosus.
Rosa heliophyla Greene. (*R. pratincola* Greene of manuals) Prairie Rose. Common and very variable.
Rosa blanda Ait. Wood Rose. Common; woods, borders, and banks.
Rosa rubiginosa L. Established in pasture, Estherville.
Prunus serotina Ehrh. (*Padus virginiana* (L.) Mill.) Wild Black Cherry. Rare, woods west of Estherville, High Lake.
Prunus virginiana L. (*Padus nana* (Du Roi.) Roemer. Choke Cherry. Common, woods and borders.
Prunus pennsylvanica L. f. Wild Red Cherry. Pin Cherry. Upland woods at Estherville and southward on west side of the Des Moines River valley. Also rare along east fork of the Des Moines, west of Armstrong.
Prunus americana Marsh. Wild Plum. Common, woods and thickets. Very variable as to size and flavor of fruit, which on some trees is worthless and on others may well rival the cultivated varieties.

Leguminosae

- Desmanthus illinoensis* (Michx.) MacM. (*Acuan* Kuntze.) Mimosa. Infrequent along lake shores, High Lake, Eagle Lake, Tuttle Lake.
Gymnocladus dioica (L.) Koch. Kentucky Coffee-tree. A rare tree in this region. A few trees occur in four separate places around Mud and High lakes; also three trees on School-section Creek, Estherville.
Cassia Chamaecrista L. (*Chamaecrista fasciculata* (Michx.) Greene) Partridge Pea. Sensitive Pea. Common in sandy soil on prairies.
Baptisia bracteata (Muhl.) Ell. Wild Indigo. Dry prairies; seems to be confined to eastern part of county.
Trifolium pratense L. Red Clover. Everywhere.
Trifolium repens L. White Clover. Everywhere.
Trifolium hybridum L. Alsike Clover, Common.
Trifolium procumbens L. Low Hop Clover. Common in Estherville and vicinity. All the species of *Trifolium* are naturalized from Europe as are also the two following.
Melilotus officinalis (L.) Lam. Yellow Sweet Clover. Roadsides.
Melilotus alba Desr. White Sweet Clover. Roadsides.
Medicago sativa L. Alfalfa. Generally persists along roadsides where cultivated.
Medicago lupulina L. Black Medick. Waste ground around Estherville; roadsides and pastures. Introduced.
Psoralea argophylla Pursh. Silver-leaf Psoralea, Very common on prairie slopes.
Psoralea esculenta Pursh. Pomme Blanche. Pomme de Prairie. Less common, on high prairies.
Amorpha canescens Pursh. Lead Plant. A little shrub frequent on dry prairies and knolls.
Amorpha microphylla Pursh. (*A. nana* Nutt.) Dwarf False Indigo. On prairies in eastern part of county.
Amorpha fruticosa L. False Indigo. A common shrub in sandy soil and along banks.

- Petalostemum purpureum* (Vent.) Rydb. Purple Prairie Clover. On high prairies.
- Petalostemum candidum* Michx. White Prairie Clover. Common on high prairies.
- Robinia Pseudo-Acacia* L. Locust Tree. Sometimes escaped from cultivation in and around groves.
- Astragalus caryocarpus* Ker. (*Geoprumnon crassicaupum* (Nutt.) Rydb.) Ground Plum. On dry prairie knolls; flowering in early spring.
- Astragalus canadensis* L. (*A. carolinianus* L.) Milk Vetch. Woods and prairies; frequent.
- Astragalus hypoglottis* L. Purple Milk Vetch. Rare. On a gravel knoll, Sec. 28, Emmet Township.
- Oxytropis Lambertii* Pursh. Stemless Loco Weed. On gravelly knolls near western border of county in Emmet Township.
- Glycyrrhiza lepidota* Pursh. Wild Liquorice. Frequent on dry prairies or in sandy soil.
- Desmodium grandiflorum* (Walt.) D. C. (*Meibomia* Kuntze.) Large-leaved Tick-trefoil. Common in woods.
- Desmodium bracteosum* var *longifolium* (T. & G.) Robinson. (*Meibomia* Kuntze.) Long-leaved Tick-trefoil. Common locally in Estherville woods. Also at High Lake.
- Desmodium illinoense* Gray. (*Meibomia* Ktze.) Rare, dry wooded hillside, Estherville.
- Desmodium Dillenii* Darl. (*Meibomia* Ktze.) Dry open woods, Estherville.
- Desmodium canadense* (L.) D. C. (*Meibomia* Ktze.) Showy Tick-trefoil. Common, prairies and borders of woods.
- Lespedeza capitata* Michx. Tall Bush-clover. Frequent on dry prairies.
- Lespedeza capitata* var *longifolia* (DC.) T. & G. Reported by Cratty.
- Lespedeza leptostachya* Engelm. Prairie Bush-clover. Less common. Dry prairies and knolls.
- Vicia americana* Muhl. American Vetch. Pea Vine. Common. Woods and prairies.
- Lathyrus palustris* L. Marsh Vetchling. Frequent in low meadows.
- Lathyrus venosus* Muhl. Veiny Pea. Common woods and prairies.
- Lathyrus ochroleucus* Hook. Cream-colored Vetchling. Not common, In woods west and south of Estherville.
- Apios tuberosa* Moench. (*A. Apios* Macm., *Glycine* L.) Ground-nut. Wild Bean, False Wisteria. Infrequent along moist banks and borders.
- Strophostyles helvola* (L.) Britton. Trailing Wild Bean. Infrequent; shores of lakes and river banks.
- Strophostyles pauciflora* (Benth.) Wats. Small Wild Bean. Infrequent; sandy shores and banks of lakes. High Lake, Mud Lake, Swan Lake.
- Amphicarpa monoica* (L.) Ell. (*Falcata comosa* (L.) Ktze.) Hog Peanut. Common, Woods and prairies.

Linaceae

- Linum sulcatum* Riddell. (*Cathartolinum* Small.) Grooved Yellow Flax. Frequent on dry prairies.
- Linum usitatissimum* L. Flax. Roadsides and waste places near where it has been grown but hardly persists for any length of time.

Oxalidaceae

- Oxalis violacea* L. (*Ionoxalis* Small.) Violet Wood-sorrel. Common, prairies and around fields.
Oxalis stricta L. (*Xanthoxalis* Small.) Yellow Wood-sorrel. Common. Woods and prairies and waste ground.
Oxalis corniculata (L.) Small. (*Xanthoxalis* Small) In and around green-houses.
Oxalis Brittoniae Small. (*Xanthoxalis* Small.) On dry prairie, Twelve Mile Lake. Appears nearest to this species.
Oxalis Bushii Small. (*Xanthoxalis* Small) In dry soil, woods and prairies.

Zygophyllaceae

- Tribulus terrestris* L. Caltrop. On dump at Estherville.

Geraniaceae

- Geranium maculatum* L. Wild Cranesbill. Not common, High Lake and Estherville woods.
Geranium Bicknellii Britton. Bicknell's Cranesbill. Frequent locally in Estherville woods.

Rutaceae

- Zanthoxylum americanum* Mill. Prickly Ash. Common in woods and thickets.

Polygalaceae

- Polygala incarnata* L. Pink Milkwort. Very rare. Found once by Mr. Cratty near Armstrong.
Polygala sanguinea L. (*P. viridescens* L.) Field Milkwort. "Very rare; prairies near Armstrong" — Cratty.
Polygala verticillata L. Whorled Milkwort. Locally frequent on low prairies.

Euphorbiaceae

- Acalypha virginica* L. Three-seeded Mercury. Common in woods and sometimes around dwellings.
Euphorbia serpyllifolia Pers. (*Chamaesyce* Small.) Thyme-leaved Spurge. Common in dry soil and cultivated ground.
Euphorbia glyptosperma Engelm. (*Chamaesyce* Small) Ridge-seeded Spurge. A very common weed in waste and cultivated ground and on dry prairies.
Euphorbia Preslii Guss. (*Chamaesyce* Arthur.) Upright Spurge. Frequent in timothy fields and in sandy ground.
Euphorbia maculata L. (*Chamaesyce* Small.) Milk Purslane. In dry soil; common.
Euphorbia corollata L. (*Tithymalopsis* Kl. & Gareke.) Flowering Spurge. Frequent in gravelly soil along Des Moines River, south High Lake.
Euphorbia Cyprisissia L. (*Tithymalus* Hill.) Cypress Spurge. Often escaped around cemeteries and gardens. *Euphorbia Esula* L. has been found across the state line in Minnesota.

Callitrichaceae

- Callitriche palustris* L. Water Starwort. Generally rare, but locally abundant in a brook running from a bog southeast from Estherville. Slough near Armstrong (Cratty). Twelve-mile Lake. (Shimek.)

Anacardiaceae

Rhus typhina L. (*R. hirta* L.) Staghorn Sumach. Rare; banks south side of Iowa Lake. Also east fork of Des Moines River southwest of Armstrong (Cratty).

Rhus glabra L. Smooth Sumach. Common around timber throughout.

Rhus Toxicodendron L. (*Toxicodendron radicans* (L.) Kuntze.) Poison Ivy. Very common; woods, prairies, groves, and fence rows. Ours is the bushy form, but the climbing form (var. *radicans* (L.) Torr.) occurs very rarely in Estherville woods.

Celastraceae

Euonymus atropureus Jacq. Wahoo. Burning Bush. Frequent in Estherville woods; also at High Lake.

Celastrus scandens L. Climbing Bittersweet. Frequent in woods.

Staphyleaceae

Staphylea trifolia L. Bladder-nut. A little shrub occurring in woods west of Estherville, and also on island in Swan Lake.

Aceraceae

Acer saccharum Marsh. Hard Maple. Sugar Maple. At Mud Lake, and to some extent at Estherville, with the following variety or species. These two maples intergrade in this section and it is often difficult to tell them apart.

Acer saccharum var. *nigrum* (Michx. f.) Britton. (*A. nigrum* Michx.) Black Sugar Maple. At Estherville, Emmet, and Iowa Lake.

Acer saccharinum L. Soft Maple. Silver Maple. Common along east and west fork of Des Moines and extensively planted in prairie groves.

Acer Negundo L. Box Elder. Common in woods and along streams.

Balsaminaceae

Impatiens pallida Nutt. Pale Touch-me-not. Jewelweed. Very common in High Lake woods and in low woods throughout.

Impatiens biflora Walt. Spotted Touch-me-not. In springy ground in woods and along low banks.

Rhamnaceae

Caenothus americanus L. New Jersey Tea. Frequent on dry prairies and in open woods.

Vitaceae

Psedera quinquefolia (L.) Greene. (*Parthenocissus* Planch.) Virginia Creeper. Common in woods and planted groves.

Psedera quinquefolia var. *hirsuta* (Donn.) Rehder. In Estherville woods. Leaves and petioles hairy.

Vitis vulpina L. Wild Grape. Common; banks, woods, and planted groves.

Tiliaceae

Tilia americana L. Basswood. Common in woods.

Malvaceae

Abutilon Theophrasti Medic. (*A. Abutilon* Rusby.) Indian Mallow. Velvet Leaf. Introduced in waste places and yards along Des Moines River.

Malva rotundifolia L. Round-leaved-Mallow, Cheeses. Common weed around yards and dwellings. Introduced.

Malva sylvestris L. High Mallow. Infrequent around dwellings. Introduced.

Hibiscus Trionum L. Bladder Ketmia. Flower-of-an-hour. Frequent in cultivated ground. Introduced.

Hypericaceae

Hypericum Ascyron L. Great or Giant St. John's-Wort. Along banks of Des Moines River in Emmet Township.

Hypericum canadense L. St. John's-wort. Rare, in wet ground. High Lake, Armstrong (Cratty).

Hypericum virginicum L. (*Triadenum* Raf.) Marsh St. John's Wort. "Common in marshes" — Cratty.

Cistaceae

Helianthemum majus B S P (*Crocanthemum* Britton) Frost-weed. Very common on gravelly knolls in western Emmet Township, otherwise rare. Estherville, High Lake.

Violaceae

Viola cucullata Ait. Blue Violet. Frequent in wet meadows.

Viola papilionacea Pursh. Meadow Violet. Frequent in moist meadows and groves.

Viola palmata L. Early Blue Violet. In meadow near High Lake and on prairies, High Lake, and Estherville; infrequent. Summer leaves unevenly lobed or divided.

Viola sororia Willd. Hairy Blue Violet. Very common. In low woods and especially in orchards and around dwellings.

Viola pedatifida G. Don. Prairie Violet. Common on prairies.

Viola pubescens Ait. Downy Yellow Violet. Common in woods.

Viola scabriuscula Schwein. (*V. eriocarpa* Schwein.) Smoother Yellow-Violet. In woods, Most of our yellow violets are of forms intermediate between these two species and can often be only arbitrarily placed with one or the other. Specimens have been referred to both species by botanists.

Viola canadensis L. Canada Violet. Once abundant on a tiny island in a pond near High Lake where it has since been destroyed by pasturing. Also occurs in woods south of Swan Lake. Our form is evidently the *V. rugulosa* Greene, of Ill. Fl.

Elaeagnaceae

Shepherdia argentea Nutt. (*Lepargyrea* Greene) Buffalo Berry. At Estherville on stand pipe bluff and also farther north. A western shrub here probably reaching its most eastern distribution in Iowa.

Lythraceae

Lythrum alatum Pursh. Loosestrife. Common in low ground on prairies.

Onagraceae

Ludvigia polycarpa Short & Peter. Many-fruited Ludvigia. Very rare. Collected in low ground near High Lake Aug. 1909, but not found since. Armstrong (Cratty).

Ludvigio palustris (L.) Ell. (*Isnardia* L.) Water Purslane. (Fitzpatrick).

Epilobium angustifolium L. (*Chamaenerion* Scop.) Great Willow-herb.

Recorded by Mr. Cratty as follows, "Collected, but once in low ground one mile northeast of Armstrong." The author saw a few plants of this species in low ground near Iowa Lake, a few rods north of state line Aug. 1921.

Epilobium densum Raf. (*E. lineare* Muhl.) Narrow-leaved Willow-herb. Infrequent in marshes.

Epilobium coloratum Muhl. Willow-herb. Frequent in marshes.

Epilobium adenocaulon Haussk. Northern Willow-herb. Low ground; less common.

Oenothera muricata L. Evening Primrose. Ours are mostly referable to this or the following species.

Oenothera biennis L. Evening Primrose. Common weed.

Oenothera serrulata Nutt. (*Merioliix* Walp.) Tooth-leaved Primrose. Frequent on dry prairies.

Gaura biennis L. Gaura. Roadside, Estherville Township.

Circaea lutetiana L. Enchanter's Nightshade. Common in woods.

Haloragadaceae

Myriophyllum spicatum L. Water Milfoil. Common in lakes and ponds.

Myriophyllum heterophyllum Michx. Ponds and streams (Cratty).

Araliaceae

Aralia racemosa L. American Spikenard. Frequent in rich woods.

Aralia nudicaulis L. Wild Sarsaparilla. Common along wooded banks and slopes. High Lake, Estherville.

Panax quinquefolium L. Ginseng. In rich woods. Once common but now very rare. High Lake, Estherville, Iowa Lake, Armstrong Grove (Cratty).

Umbelliferae

Eryngium yuccifolium Mich. (*E. aquaticum* L.) Rattlesnake Master. Button Snakeroot. Common on prairies.

Sanicula marilandica L. Black Snakeroot. Sanicle. Frequent in woods.

Sanicula gregaria Bicknell. Clustered Snake-root. Common in woods.

Sanicula canadensis L. Short-styled Snake-root. Common in woods. In High Lake woods, is found a form of this species with long slender styles.

No mention of the form is made in the manuals and it is probably local.

Osmorhiza Claytoni (Michx.) Clarke. (*Washingtonia* Britton) Woolly Sweet Cicely. Common in rich woods.

Osmorhiza longistylis (Torr.) D. C. (*Washingtonia* Britton) Smoother Sweet Cicely. Common in woods.

Osmorhiza longistylis var *villicaulis* Fernald. A form of the above with villous stems. High Lake.

Cicuta maculata L. Water Hemlock. Cowbane. Common on low prairies.

Cicuta bulbifera L. Bulb-bearing Water Hemlock. Infrequent in marshes. Around Mud, High and Four-mile lakes. Also eastern part of county (Cratty).

Carum Carvi L. Caraway. Naturalized from Europe. Roadsides and near dwellings.

Berula erecta (Huds.) Coville. Cut-leaved Water Parsnip. Rare. In hanging bog, bank of Des Moines River, Sec. 16, Emmet Township.

Siium cicutaefolium Schrank. Water Parsnip. Frequent in marshes.

- Cryptotaenia canadensis* (L.) D. C. (*Deringa* Kuntze.) Honewort. Very common in woods.
- Zizia aurea* (L.) Koch. Golden Meadow-parsnip. Common; low woods and borders.
- Zizia cordata* (Walt.) D. C. Heart-leaved Alexander. This species is very common on dry prairies in southern Minnesota and reaches down through the northern tier of townships in Emmet County.
- Taenidia integerrima* (L.) Drude. Yellow Pimpernel. Frequent along banks and in dry woods, High Lake, Estherville. Iowa Lake (Cratty).
- Thaspium aureum* Nutt. (*T. trifoliatum* (L.) Britton) Meadow Parsnip. Estherville woods (Cratty).
- Thaspium barbinode* (Michx.) Nutt. Common, borders of woods and low meadows.
- Lomatium orientale* Coult. & Rose (*Cogswellia orientalis* M. E. Jones.) White-flowered Parsley. Rare. High banks of Des Moines River south-east of Estherville, and on gravelly knolls in Emmet township.
- Pastinaca sativa* L. Parsnip. Escaped, and a common roadside weed.
- Anethum graveolens* L. Dill. Sometimes persists around dwellings and gardens.
- Heracleum lanatum* Michx. Cow Parsnip. Frequent in woods, High Lake, Estherville.
- Conioselinum chinense* (L.) BSP. Hemlock Parsley. A specimen collected in Estherville woods by T. J. Fitzpatrick in 1903 (Cratty).
- Angelica atropurpurea* L. Purple-stemmed Angelica. Reported by Prof. Shimek.

Cornaceae

- Cornus circinata* L'Her. Round-leaved Dogwood. Frequent in Estherville woods. Rare along East Des Moines River.
- Cornus Amomum* Mill. Kinnikinnik. A shrub growing in dense clumps and which in late winter and spring has beautiful, reddish-purple branches and shoots. Common along low banks and in low woods.
- Cornus asperifolia* Michx. Rough-leaved Dogwood. Iowa Lake and Armstrong Grove — (Cratty).
- Cornus stolonifera* Michx. Red-osier Dogwood. Infrequent; low woods and banks. Tuttle Lake.
- Cornus paniculata* L'Her. (*C. femina* Mill.) Panicked Dogwood. Very common in woods.
- Cornus alternifolia* L. f. Alternate-leaved Dogwood. In Estherville woods. Also along East Des Moines near Armstrong.

Ericaceae

- Pyrola secunda* L. One-sided Wintergreen. Rare; Estherville woods.
- Pyrola elliptica* Nutt. Shin Leaf. Infrequent; hillsides and ridges, Estherville woods; High Lake, rare. (Station destroyed).

Primulaceae

- Lysimachia thyrsiflora* L. (*Naumburgia* Duby.) Tufted Loosestrife. Common in marshes.
- Steironema ciliatum* (L.) Raf. Fringed Loosestrife. Common; borders of woods.
- Steironema lanceolatum* (Walt.) Gray. Rare in low ground (Cratty).

Steironema quadriflorum (Sims) Hitchc. Prairie Loosestrife. Common on low prairies and in bogs.

Oleaceae

Fraxinus pennsylvanica Marsh. Red Ash. Infrequent; mostly along river and lake banks. Estherville, High Lake. Tuttle lake, Swan lake, (Pammel). Passes into the following variety which is our common ash.

Fraxinus pennsylvanica var. *lanceolata* (Bockh.) Sarg. Green Ash. Very common in low woods.¹

Fraxinus nigra Marsh. Black Ash. A swamp-loving species found in this region only at Estherville where it grows around bogs and springs along Des Moines River north of town.

Gentianaceae

Gentiana crinita Froel. Fringed Gentian. Infrequent in bogs and springy ground near Estherville. Also near Armstrong (Cratty).

Gentiana procera Holm. Smaller Fringed Gentian. Rather frequent in bogs in Emmet Township. Rare southeast of Estherville. Armstrong; rare (Cratty).

Gentiana quinquefolia var. *occidentalis* (Gray.) Hitchc. "Rare in woods near Estherville" — Cratty.

Gentiana puberula Michx. (*Dasystephana* Small.) Prairie Gentian. Infrequent on dry prairies, blooming in late September and October. A very beautiful species.

Gentiana Andrewsii Griseb. (*Dasystephana* Small.) Closed Gentian. Infrequent; low prairies and borders.

Menyanthes trifoliata L. Buckbean. "Frequent in bogs" — Cratty. At present found in a peat bog in the southwestern part of High Lake Township.

Asclepiadaceae

Asclepias tuberosa L. Butterfly-weed. Pleurisy-root. Common on dry prairies.

Asclepias purpurascens L. Purple Milkweed. (Fitzpatrick).

Asclepias speciosa Torr. Showy Milkweed. Frequent on prairies; roadsides and fields.

Asclepias incarnata L. Swamp Milkweed. Common in low ground.

Asclepias syriaca L. Common Milkweed. A common weed.

Asclepias Sullivantii Engelm. Frequent on low prairies.

Asclepias ovalifolia Dcne. Dry woods and prairies (Cratty).

Asclepias verticillata L. Whorled Milkweed. Frequent; oak groves and prairies.

Acerates viridiflora Ell. Green Milkweed. Rare. On high prairies.

Acerates viridiflora var. *lanceolata* (Ives) Gray. The most common form. Plants are found with umbels on peduncles an inch long.

Acerates lanuginosa (Nutt.) Dcne. Woolly Milkweed. Rare on dry prairies.

Acerates floridana (Lam.) Hitchc. (Shimek).

Convolvulaceae

Ipomea hederacea Jacq. Ivy-leaved Morning-glory. In waste ground in and around Estherville. Introduced.

Ipomea purpurea (L.) Roth. Common Morning-glory. In thickets, and a weed in fields. Estherville.

¹ See Kelley, A. P. Studies in Iowa Plant Life I. Univ. of Iowa Studies, Vol. XIII, No. 5. 1931.

- Convolvulus sepium* L. Hedge Bindweed. Morning-glory. Common weed.
Convolvulus arvensis L. Small Bindweed. Roadsides and along rail-road tracks in Estherville township.
Cuscuta curta (L. H. Pammel).
Cuscuta Cephalanthi Engelm. High Lake, Iowa Lake (Cratty).
Cuscuta obtusiflora HBK. (*C. polygonorum* Engelm.) Smart-weed Dodder. Frequent on tall herbs in wet ground.
Cuscuta arvensis Beyrich. Field Dodder. On herbs in dry soil, High Lake, Armstrong (Cratty).
Cuscuta Gronovii Willd. On herbs in wet shady places, High Lake, Estherville.
Cuscuta glomerata Choisy. (*C. paradoxa* Raf.?) Glomerate Dodder. Common on tall herbs. Some of the author's material of dodder has not been determined and may include other species, probably *C. Coryli* Englm.

Polemoniaceae

- Phlox maculata* L. Wild Sweet William. Reported by Prof. B. Shimek. The writer has never seen this species in Emmet County.
Phlox pilosa L. Prairie Phlox. Very common on prairies.
Phlox divaricata L. Wild Blue Phlox. Wood Phlox. Very common in woods.
Gilia linearis. (Nutt.) Gray. (*Collomia* Nutt.) Collomia. Along railroad right-of-way, Estherville. Probably introduced.

Hydrophyllaceae

- Hydrophyllum virginianum* L. Water-leaf. Very common in woods.
Ellisia Nyctelia L. (*Nyctelea* Britton.) Nyctelia. Common in shady ground.

Boraginaceae

- Lappula virginiana* (L.) Greene. Virginia Stickseed. Beggars Lice. Common in woods.
Lappula echinata Gilibert. (*L. Lappula* (L.) Karst.) Burseed. Common; waste places and pastures.
Lappula Redowskii (Hornem.) Greene. var. *occidentalis*. (Wats.) Rydb. (*L. texana* Britton) Hairy Stickseed. Common.
Lithospermum latifolium Michx. American Gromwell. Frequent in High Lake woods.
Lithospermum canescens (Michx.) Lehm. Hoary Puccoon. Common on prairies.
Lithospermum angustifolium Michx. (*L. linearifolium* Goldie). Narrow-leaved Puccoon. Locally frequent in sandy or gravelly soil.
Lithospermum Gmelini (Michx.) Hitchc. (*L. hirtum* Lehm.) (*L. carolinense* (Walt.) MacM.) Hairy Puccoon. Credited to Emmet county by Fitzpatrick.
Onosmodium occidentale Mack. Western False Gromwell. Frequent on dry prairies.

Verbenaceae

- Verbena urticaefolia* L. White Vervain. Common in pastures.
Verbena hastata L. Blue Vervain. Common in moist pastures.
Verbena stricta Vent. Hoary Vervain. Common in dry pastures. Sometimes plants are seen with white or pink flowers.
Verbena bracteosa Michx. Prostrate Vervain. Frequent in dry pastures. Specimens collected on river bank at Estherville resemble *V. officinalis*

somewhat, but are probably hybrids between *V. urticaefolia* and *V. bracteosa*.

Lippia lanceolata Michx. Fog-fruit. Along shores of Swan Lake.

Labiatae

Teucrium canadense L. Wood Sage. Frequent in moist woods.

Teucrium occidentale Gray. Hairy Germander. Frequent; low prairies and around marshes.

Scutellaria lateriflora L. Mad-dog Skullcap. Common around marshes.

Scutellaria galericulata L. Marsh Skullcap. Common in marshes.

Scutellaria parvula Michx. var. *ambigua* (Nutt.) Fernald. Small Skullcap. Frequent on low praries.

Agastache nepetoides (L.) Ktze. Catnip Giant Hyssop. Along low border southeast of Mud Lake, which is the only locality known in the county.

Agastache scrophulariaefolia (Willd.) Ktze. Giant Hyssop. Common; woods.

Agastache Foeniculum (Pursh.) Ktze. (*A. anethiodora* (Nutt.) Britton. Fragrant Giant Hyssop. Infrequent in dry woods west and north of Estherville.

Nepeta Cataria L. Catnip. Very common in waste ground and near dwellings. Introduced.

Nepeta hederacea (L.) Trevisan (*Glechoma hederacea* L.) Ground Ivy. Near dwellings and escaped into woods, High Lake and Estherville.

Dracocephalum parviflorum Nutt. (*Moldovica parviflora* (Nutt.) Britton) Dragon Head. In cultivated ground near woods around Estherville. Possibly introduced.

Prunella vulgaris L. Self Heal. Frequent in pastures and open woods.

Physostegia virginiana (L.) Benth. (*Dracocephalum* L.) False Dragon Head. In wet shady ground around marshes and along streams. Our form seems nearest to *P. formosior* Lunell.

Leonorus Cardiac L. Motherwort. Introduced near dwellings and in woods and pastures.

Stachys aspera Michx. Credited to Emmet county by Fitzpatrick.

Stachys palustris L. Hedge Nettle. Around marshes, along river banks, and on low prairies. Along river banks at Estherville is found a form with all the leaves petioled which may have been mistaken for *S. aspera*.

Salvia lanceaefolia Poir. Sage. Banks of High Lake. Also occurs as a barn-yard and pasture weed in other parts of county.

Monarda mollis L. Pale Wild Bergamot. Very common; open woods and prairies.

Hedeoma hispida Pursh. Rough Pennyroyal. Dry fields and prairies.

Pycnanthemum virginianum (L.) D. & J. (*Koellia* MacM.) Mountain Mint. Common; low prairies.

Lycopus uniflorus Michx. Northern Bugle-weed. In wet ground, very common throughout. This has generally been mistaken for *L. virginicus* L. which probably does not occur here.

Lycopus rubellus Moench. Stalked Water Hoarhound. In wet ground along Des Moines River.

Lycopus lucidus Turcz. var. *americanus* Gray. (*L. asper* Greene.) Western Water Hoarhound. Frequent in wet soil.

Lycopus americanus Muhl. Cut-leaved Water Hoarhound. Common in marshes and wet ground.

Mentha gentilis L. Creeping Mint. Spearmint. Naturalized in artificial grove, Center. Waste ground, Estherville.

Mentha arvensis L. var. *canadensis* (L.) Briquet. (*M. canadensis* L.) Wild Mint. Common; low ground.

Solanaceae

Solanum nigrum L. Black Nighshade. Common in waste and cultivated ground.

Solanum rostratum Dunal. Buffalo Bur. Introduced, mostly around barnyards.

Physalis pubescens L. Low Hairy Ground Cherry. Cultivated and probably also native. Lake shore, Mud Lake.

Physalis pruinosa L. Tall Ground Cherry. Infrequent. Lake shore, Mud Lake. *P. ixocarpa* Brot. (Tomatillo), with purple berries, sometimes persist around gardens, as does also *P. Alkekengi* L. which has a scarlet or crimson fruiting-calyx.

Physalis heterophylla Nees. Clammy Ground Cherry. A common weed in cultivated ground.

Physalis subglabrata Mackenzie & Bush. Smooth Ground Cherry. On prairies. Roadside on township line between Emmet and Ellsworth.

Physalis virginiana Mill. Frequent on prairies. A form collected in Emmet township has the fruiting calyx much longer than normal.

Physalis lanceolata Michx. On prairies (Cratty).

Physalis macrophylla Rydb. Frequent in cultivated ground near Estherville.

Lycium halimifolium Mill. Matrimony Vine. Rarely escaped to roadsides.

Datura Stramonium L. Jimson Weed. Introduced in pastures and waste ground near Iowa Lake.

Schrophulariaceae

Verbascum Thapsus L. Great Mullein. Frequent in dry pastures and clearings. Introduced.

Linaria vulgaris Hill. (*L. Linaria* (L.) Karst. Butter and Eggs. Introduced; waste ground and open woods.

Scrophularia marilandica L. Figwort. Frequent, woods and prairies.

Scrophularia leporella Bicknell. In Estherville woods.

Mimulus ringens L. Monkey-flower. Frequent in wet ground.

Mimulus glabratus HBK. var. *Jamesii* (T. & G.) Gray. (*Mimulus. Geyeri* Torr.) Yellow Monkey-flower. Rare. In shallow brook, Sec. 28, Emmet Township.

Ilysanthes dubia (L.) Barnhart. False Pimpernel. In wet ground along Des Moines River and in High Lake woods. This is the *I. dubia* of Gray's Manual and not of the Illustrated Flora and is presumably *I. attenuata* Small. of the latter.

Gratiola virginiana L. Clammy Hedge-Hyssop. Frequent in wet ground.

Veronica virginica L. (*Leptandra* Nutt.) Culver's-root. Frequent; woods and prairies.

Veronica Anagallis-aquatica L. Water Speedwell. Frequent along streams.

Veronica peregrina L. Purslane Speedwell. Neck-weed. In low ground in woods, Estherville.

Syntheris Bullii (Eaton.) Heller. Bull's Syntheris On dry hillsides and oak knolls along west side of Des Moines River in Emmet Township. A rare plant in this part of the state.

- Gerardia auriculata* Michx. (*Otophylla* Small.) Auricled Gerardia. Infrequent or local on low prairies. High Lake, Emmet, Ryan Lake.
- Gerardia aspera* Dougl. (*Agalinis* Britton.) Purple Gerardia. Infrequent on dry prairies; ridges along Des Moines River.
- Gerardia paupercula* (Gray) Britton. Frequent in bogs in Emmet. Also near Armstrong (Cratty).
- Gerardia tenuifolia* Vahl. (*Agalinis* Raf.) Slender Gerardia. (Cratty). All specimens examined by the writer are evidently the following.
- Gerardia tenuifolia* var. *macrophylla* Benth. (*Agalinis Besseyana* Britton) Common in low ground.
- Castilleja sessiliflora* Pursh. Downy Painted-cup. On dry prairie hillsides and knolls.
- Pedicularis canadensis* L. Wood Betony. Common on prairies, and on hillsides in Estherville woods. Blooms in April-May.
- Pedicularis lanceolata* Michx. Swamp Lousewort. Frequent; low prairies and borders, High Lake, Jack Creek. Blooms in September.

Lentibulariaceae

- Utricularia vulgaris* L. var. *americanus* Gray. (*U. macrorhiza* Le Conte.) Greater Bladderwort. Common in shallow ponds.
- Utricularia minor* L. Smaller Bladderwort. "Very rare in marsh northeast of Armstrong" — Cratty.
- Utricularia intermedia* Hayne. Flat-leaved Bladderwort. "Rare in marsh east of Armstrong" — Cratty.

Orobanchaceae

- Orobanche uniflora* L. (*Thalesia* Britton) One-flowered Broom-rape. Very rare. Southeast bank of High Lake, May 1910; High Lake woods, May 1909; also May 1921. "North shore of Weller Lake Armstrong" — Cratty.

Plantaginaceae

- Plantago major* L. Plantain. Very common; yards and waysides.
- Plantago Rugelii* Dcne. With the preceding.
- Plantago lanceolata* L. Rib-grass: Plantain. Introduced with clover, timothy and lawn seed.
- Plantago Purshii* R. & S. Pursh's Plantain. Common on gravel plain along Des Moines River. Estherville.
- Plantago aristata* Michx. Rare. In old gravel pit north of Graettinger. Likely introduced.

Phrymaceae

- Phryma leptostachya* L. Lop-seed. Frequent; woods.

Rubiaceae

- Galium Aparine* L. Cleavers. Cling-rascal. Abundant in woods.
- Galium boreale* L. Northern Bedstraw. Common on prairies, and hillsides near woods.
- Galium trifidum* L. Rare in marshes. High Lake, Armstrong (Cratty).
- Galium tinctorium* L. Marsh Bedstraw. Frequent; low prairies.
- Galium concinnum* T. & G. Shining Bedstraw. Frequent in Estherville woods.
- Galium triflorum* Michx. Sweet-scented Bedstraw. Common in woods.

Caprifoliaceae

- Diervilla Lonicera* Mill. (*D. Diervilla* (L.) MacM.) Bush-Honeysuckle. Rare. Steep hillsides in Estherville woods.
- Lonicera tatarica* L. Tartarian Honeysuckle. Well established in old gravel pit southeast of Estherville.
- Lonicera Sullivantii* Gray. (Fitzpatrick).
- Lonicera dioica* L. Glaucous Honeysuckle. Frequent in woods.
- Symphoricarpus occidentalis* Hook. Wolf-berry. Very common; woods, banks, and prairie knolls.
- Symphoricarpus orbiculatus* Moench. (*S. Symphoricarpus* MacM.) Coral-berry. Credited to Estherville woods by Shimek. One of the distinctions given in the manuals between *S. occidentalis* and *S. orbiculatus* is that the former has a glabrous style and the latter a bearded style. This distinction does not hold however. While *S. orbiculatus* has a bearded style, *S. occidentalis* very often does not have a smooth style. At Estherville *S. occidentalis* often has a bearded style and on banks of Tuttle Lake a form occurs which in this respect and also because of its smaller leaves and flowers resembles *S. orbiculatus*, except that the fruit is not red but white. Specimens collected in flower may have been erroneously referred to the latter species.
- Triosteum perfoliatum* L. Wild Coffee. Horse Gentian. Infrequent in woods.
- Viburnum pubescens* (Ait.) Pursh, Downy Arrow-wood. Frequent on wooded hills west and south of Estherville. Rare at High Lake (Station destroyed).
- Viburnum Lentago* L. Black Haw. Nanny-berry. Frequent along banks and in woods.
- Sambucus canadensis* L. Black Elderberry. Sweet-Elder. Very common; woods and banks and often enroaching on cultivated ground.

Cucurbitaceae

- Sicyos angulatus* L. One-seeded Bur Cucumber. Frequent along low river banks north of Estherville.
- Echinocystis lobata* (Michx.) T. & G. (*Micrampelis* Raf.) Wild Balsam Apple. Common along streams and in woods.

Campanulaceae

- Specularia perfoliata* (L.) A. DC. Venus' Looking-glass. Not rare in Estherville woods.
- Campanula rapunculoides* L. European Bellflower. Rare escape in ravin near Oak Hill Cemetery, Estherville.
- Campanula americana* L. Tall Bellflower. Frequent in woods.
- Campanula rotundifolia* L. Harebell. Bluebell. Credited to Emmet county by Fitzpatrick. Possibly this species was found here in early years but it does not occur here at present.
- Campanula aparinoides* Pursh, Marsh Bellflower. In wet bogs near Estherville. "Frequent in marshes." — Cratty.
- Campanula uliginosa* Rydb. Blue Marsh Bellflower. In grassy ground around marshes, north of High Lake and southeast of Mud Lake.

Lobeliaceae

- Lobelia siphilitica* L. Great Lobelia. Common in low ground around marshes and near woods.

Lobelia spicata Lam. Spiked Lobelia. Low prairie, High Lake.

Lobelia spicata Lam. var. *hirtella* Gray. The most common form. Frequent on low prairies.

Lobelia Kalmii L. Brook Lobelia. A dainty and graceful little plant reaching down into northern Iowa and here found quite plentifully in wet bogs in Emmet Township and also rarely southeast of Estherville.

Compositae

Vernonia fasciculata Michx. Iron-weed. Common; low ground.

Eupatorium purpureum L. Joe-Pye Weed. Infrequent in woods; High Lake, Estherville. Passes into the following in open ground.

Eupatorium purpureum var. *maculatum* (L.) Darl. (*E. maculatum* L.) Spotted Joe-Pye Weed. In bogs, around springs, and in open woods.

Eupatorium altissimum L. Tall Boneset. On dry knolls and ridges and sandy banks. Local. Hills west of Estherville and west Emmet Township; banks of Swan and Tuttle lakes.

Eupatorium perfoliatum L. Common Boneset. Very common around marshes.

Eupatorium urticaefolium Reichard (*E. ageratoides* L. f.) White Snakeroot. Woods; common.

Kuhnia eupatorioides L. var. *corymbulosa* T. & G. (*K. glutinosa* Ell.) Prairie False Boneset. Prairies; common.

Liatris squarrosa Willd. (*Lacinaria* Ktze.) Scaly Blazing Star. On high prairie near southwest corner of county.

Liatris punctata Hook. (*Lacinaria* Ktze.) Dotted Blazing Star. Frequent on gravelly prairies and knolls.

Liatris scariosa Willd. (*Lacinaria* Hill.) Large Blazing Star. Common on dry prairies.

Liatris pycnostachya Michx (*Lacinaria* Ktze.) Prairie Blazing Star. Common on low prairies.

Grindelia squarrosa (Pursh.) Dunal. Gum-plant. Not common. Dry prairies near southern and western border of county.

Solidago latifolia (L.) (*S. flexicaulis* L.) Zig-zag Golden-rod Common, wooded banks and slopes.

Solidago speciosa Nutt. var. *angustata* T. & G. (*S. rigidiuscula* Porter.) Slender Showy Golden-rod. Dry prairies and knolls, High Lake, Estherville, etc.

Solidago ulmifolia Muhl. Specimen collected in High Lake woods in 1911 appeared to be this species.

Solidago missouriensis Nutt. (*S. glaberrima* Martens in Ill. Fl.) Common on prairies.

Solidago nemoralis Ait. Field Golden-rod. Frequent; dry prairies and knolls.

Solidago canadensis L. Canada Golden rod. Very common and variable. Prairies and borders.

Solidago serotina Ait. Smooth Goldenrod. Common; open woods and borders.

Solidago serotina var. *gigantea*. (Ait.) Gray Low ground.

Solidago rigida L. Stiff Goldenrod. Common on prairies.

Solidago Riddellii Frank. Grass-leaved Goldenrod. Infrequent on low prairies. Common in bogs, Emmet and Estherville.

Solidago graminifolia (L.) Salisb. (*Euthamia* Nutt.) Bushy Goldenrod. Frequent locally on low prairies.

Boltonia asteroides (L.) L. Her. Boltonia. Common in and around marshes.

Aster oblongifolius Nutt. Aromatic Aster. Frequent on dry knolls along Des

Moines River and westward. High Lake, Twelve-Mile Lake, Estherville, and Emmet.

Aster novae-angliae L. New England Aster. Common in low ground; borders and prairies. The var. *roseus* (Desf.) D. C. with pink or rose colored rays occurs infrequently

Aster sericeus Vent. Silky Aster. Frequent on dry prairies.

Aster cordifolius L. Blue Wood Aster. This is the wood aster found in most places throughout the county. Very common along banks and in hilly woods.

Aster sagittifolius Wedemeyer. Arrow-leaved Aster. In upland woods, sec. 21 Emmet Township, we find wood asters varying from fairly good forms of this species to forms nearest the following. Specimens of a somewhat different appearing form collected on banks of the Des Moines River in Emmet as early as August 13th seem also to be nearest to this species. Although of a more spreading habit it has the linear spreading involucre bracts. Typical *A. sagittifolius* occurs at Spirit Lake, Dickinson County, where it also passes into the following.

Aster Drummondii Lindl. Drummond's Aster. With the preceding, in sec. 21 Emmet Township. Intermediate forms with very large rounded leaves and almost smooth, were sent to the Gray Herbarium. In Mr. Weatherby's opinion these may be regarded as glabrate forms of this species or else possibly crosses between this species and *A. sagittifolius* or even *A. cordifolius*.

Aster laevis L. Smooth Aster, Common; open woods and dry prairies. Very variable. Very large-leaved forms may be considered as var. *amplifolius* Porter.

Aster concinnus Willd. Specimens from High Lake have been doubtfully referred to this species.

Aster ericoides L. var. *platyphyllus* T. & G. White Heath Aster. On dry knoll west of Estherville. Specimens not typical but placed here by Mr. Weatherby. The species occurs at Spirit Lake, Dickinson County.

Aster Woldenii Rydberg (in Flora of Prairies and Plains). An aster with densely grayish-hairy stem and leaves, with heads resembling those of *A. laevis* but somewhat smaller. Found along roadside between section 30 and 31, Ellsworth, where it was first collected in 1924. Also collected once in Emmet in 1922, a few miles to the west.

Aster amethystinus Nutt. Amethyst Aster. Rather infrequent on low prairies. High Lake, Estherville, and Emmet.

Aster multiflorus Ait. Dense-flowered Aster. Very common on dry prairies.

Aster multiflorus var. *exiguus* Fernald. An infrequent form.

Aster lateriflorus (L.) Britton. Low ground at Estherville.

Aster missouriensis Britton. Very variable. Several forms have been referred to this species. Low woods and river banks; often around dwellings.

Aster Tradescanti L. Michaelmass Daisy. Specimens collected at High Lake were referred to this species by Mr. Cratty.

Aster paniculatus Lam. Panicked Aster. Common in low ground, borders and prairies. Very variable, numerous forms occurring. At the time this paper was prepared the group of asters to which this and the following belong was under revision by Dr. Wiegand and on account of awaiting

the result of this study a number of specimens of this group sent to the Gray Herbarium have remained unnamed.

Aster salicifolius Ait. Willow-leaved Aster. Specimens collected in Emmet and Ellsworth were placed here by Mr. Weatherby. A quite distinct appearing aster collected in Ellsworth township was placed in this group but not definitely determined.

Aster junceus Ait. Rush Aster. Locally frequent in bogs in Emmet Township. A species of cold bogs and swamps.

Aster longifolius Lam. Common in bogs northwest from Estherville.

Aster nebraskensis Britton (Not in Gray). In bog north of Estherville. Specimens were referred to this species both by Dr. Rydberg and Mr. Weatherby.

Aster puniceus L. Purple-stem Aster. Infrequent in boggy ground.

Aster puniceus var. *lucidulus* Gray. Many forms of this variety occur in bogs in Emmet Township and some are strikingly different from the typical form of the species. *A. nebraskensis* may perhaps be considered as an extreme form of this variety.

Aster umbellatus Mill. (*Dolellingeria umbellata* (Mill.) Ness.) Flat-top White Aster. In bogs and springy ground. Frequent in Estherville and Emmet; marsh northwest of Armstrong.

Aster ptarmicoides T. & G. Upland White Aster. On high prairies in Emmet township west of the Des Moines River and southward along western border of the county.

Aster angustus (Lindl.) T. & G. (*Brachyactis* Britton) Rayless Aster. Collected for the first time in Iowa in 1904, near Armstrong by Mr. Cratty. Has since become common along lake shores in dry years.

Erigeron philadelphicus L. Fleabane. Frequent; woods and prairies.

Erigeron annuus (L.) Pers. Daisy Fleabane. Common; hay fields and pastures.

Erigeron ramosus (Walt.) BSP. Common; fields and pastures.

Erigeron canadensis L. (*Leptilon* Britton) Horseweed. A common weed.

Erigeron divaricatus Michx. (*Leptilon* Raf.) Low Horseweed. Some years ago common along flood plain of Des Moines River, High Lake. Not seen late years. Armstrong; prairie (Cratty).

Antennaria plantaginifolia (L.) Rich. Plantain-leaved Everlasting. Dry open woods.

Antennaria neglecta Greene. Field Cat-foot. Open woods, pastures and prairies.

Antennaria neodioica Greene. Credited to Emmet county by Shimek. All specimens collected by the author have been referred to the two previous species by botanists.

Silphium laciniatum L. Rosin-weed. Compass-plant. Common on prairies.

Silphium integrifolium Michx. Entire-leaved Rosin-weed. Prairies; rare, Along M & St. L. R. R. right of way, north from Estherville.

Silphium perfoliatum L. Cup Plant. Frequent in low ground near woods.

Iva xanthifolia Nutt. Marsh Elder. A coarse weed common in rich waste ground.

Ambrosia trifida L. Great Ragweed. Common weed.

Ambrosia artemisiifolia L. (*A. elatior* L.) Smaller Ragweed. Very common.

Ambrosia psilostachya DC. Western Ragweed. In sandy soil; local. Banks of lakes and gravel plains.

- Xanthium canadense* Mill. (*X. americanum* Walt. in Ill. Fl.) American Cockle-bur. Along streams and low ground.
- Xanthium commune* Britton. In sandy ground, lake shores, and fields.
- Xanthium echinatum* Murr. Beach Clothbur. Lake shores. Tuttle Lake.
- Xanthium glanduliferum* Greene. Shore of Tuttle Lake.
- Heliopsis scabra* Dunal. Ox-eye. Common, borders and prairies.
- Rudbeckia hirta* L. Black-eyed Susan. Frequent on prairies.
- Rudbeckia laciniata* L. Tall Cone-flower. Common; woods and borders.
- Brauneria angustifolia* (DC.) Heller (*Echinacea* DC.) Purple Cone-flower. On dry prairies.
- Lepachys pinnata* (Vent.) T. & G. (*Ratibida* Barnhart.) Gray-headed Cone-flower. Common on prairies.
- Helianthus annuus* L. Common Sunflower. In waste places. Established along roadsides in Emmet township. Escaped from cultivation.
- Helianthus scaberrimus* Ell. Stiff Sunflower. Common on dry prairies.
- Helianthus grosseserratus* Martens. Saw-tooth Sunflower. Common in low ground.
- Helianthus Maximiliani* Schrad. Common on prairies.
- Helianthus strumosus* L. Wood Sunflower. Frequent in woods.
- Helianthus tuberosus* L. Jerusalem Artichoke. Common; a persistent weed in fields.
- Coreopsis palmata* Nutt. Tickseed. On prairies; common.
- Bidens cernua* L. Bur-Marigold. Very common around ponds and marshes.
- Bidens frondosa* L. Beggar-ticks. Common, low ground and fields.
- Bidens vulgata* Greene var. *puberula* Wiegand. Hairy Beggar-ticks.
- Bidens comosa* (Gray.) Wiegand. Leafy-bracted Tick-seed. In low ground and along streams.
- Bidens connata* Muhl. Swamp Beggar-ticks. Wet ground, Estherville.
- Helenium autumnale* L. Sneezeweed. Common in low ground.
- Achillea millefolium* L. Yarrow, Milfoil. Very common in dry pastures.
- Achillae lanulosa* Nutt. Woolly Yarrow. Very woolly forms may be placed here. Our plants are probably mostly intermediate between the two so-called species and could be referred to either one.
- Anthemis Cotula* L. May weed. Dog Fennel. Very common, in yards and around dwellings.
- Chrysanthemum Leucanthemum* L. Ox-eye Daisy. A rare escape in woods near Oak Hill Cemetery, Estherville; also roadside in Ellsworth.
- Tanacetum vulgare* L. Tansy. Escaped along fences and road sides around cemeteries and around old dwellings.
- Artemisia caudata* Michx. Tall Wormwood. Frequent on dry and gravelly knolls.
- Artemisia serrata* Nutt. Borders and prairies.
- Artemisia dracunculoides* Pursh. Linear-leaved Wormwood. Frequent, dry prairies and along banks.
- Artemisia gnaphalodes* Nutt. Mugwort. Borders and prairies.
- Artemisia pabularis* (A. Nels.) Rydberg.
- Artemisia Purshiana* Bess. This and the preceding grow in gravelly soil near railroad tracks south side of Esterville. As they are western species they are most likely introduced. Determinations by Dr. Rydberg and Mr. Weatherby.
- Artemisia biennis* Willd. Biennial Wormwood. Frequent; often a weed.

- Artemisia Absinthium* L. Wormwood. Introduced in waste places (Cratty).
Erechtites hieracifolia (L.) Raf. Fire-weed. Rare; shores of Mud Lake 1913; Swan Lake, Estherville woods.
Cacalia tuberosa Nutt. (*Mesadenis* Britton) Tuberous Indian Plantain. Infrequent on prairies.
Senecio palustris (L.) Hook. Marsh Fleawort. Some seasons abundant, growing on mud around ponds and marshes.
Senecio aureus L. Golden Ragwort, Squaw-weed. Frequent on low prairies.
Senecio balsamitae Muhl. (*S. pauperculus* Michx.) Balsam Groundsel. Infrequent or rare. On prairies two miles east of Wallingford. Also on high hillside south of county farm. Determination verified by Dr. Rydberg.
Senecio plattensis Nutt. On high prairie knolls. (Cratty).
Senecio integerrimus Nutt. Groundsel. On prairie in Emmet township.
Senecio Hookeri T. & G. Fl. N. A. (Not in Gray or Ill. Fl.) A form growing near an abandoned dwelling on the river plain between Estherville and Wallingford was referred to this species by Dr. J. M. Greenman of the Missouri Botanical Garden, to whom specimens of this and the preceding were sent. This is a species of the northwest occurring east to Montana and Wyoming and the only explanation of its occurrence in this place must be that it has sometime been introduced or planted. However this species is closely related to *S. integerrimus* and it is possible that our plant may prove eventually to be referable to that species of which it may be a pubescent form.
Arctium minus Bernh. Common Burdock. Waste places.
Arctium tomentosum (Lam.) Schk. (*A. lappa* var. *tomentosum* Gray.) Woolly Burdock. Estherville.
Carduus acanthoides L. Plumeless Thistle. In pasture, Emmet. Introduced.
Cirsium lanceolatum (L.) Hill. Bull Thistle. Common; pastures.
Cirsium canescens Nutt. (*C. Flodmani* (Rydb.) Britton) Woolly Thistle. Frequent; dry prairies and pastures.
Cirsium discolor (Muhl.) Spreng. Field Thistle. Common; woods and prairies.
Cirsium iowense (Pammel) Fernald. Iowa Thistle. Common; low prairies and borders.
Cirsium iowense var. *Crattyi* Pammel. (Pammel and Cratty.)
Cirsium arvense (L.) Scop. Canada Thistle. Introduced. Common.
Centaurea maculosa Lam. Spotted Knapweed. South side of Twelve Mile Lake. Introduced.
Cichorium Intybus L. Chicory. Introduced; roadsides and pastures.
Tragopogon pratensis L. Goats Beard. Rare; roadsides. Introduced.
Taraxacum officinale Weber (*Leontodon Taraxacum* L.) Common Dandelion. Common everywhere.
Taraxacum erythrospermum Andr. (*Leontodon* Britton) Red-seeded Dandelion. With the preceding but less common. Prefers sandy ground.
Sonchus arvensis L. Perennial Sow Thistle. Waste ground in Estherville.
Sonchus oleraceus L. Sow Thistle. Waste ground in Estherville.
Sonchus asper (L.) Hill. Spiny-leaved Sow Thistle. Frequent; waste ground.
Lactuca scariola L. (*L. virosa* L.) Prickly Lettuce. Common introduced weed.

Lactuca scariola var. *integrata* Gren. & Godr. Common; often with the preceding.

Lactuca canadensis L. Tall Lettuce. Common; woods and borders.

Lactuca ludoviciana (Nutt.) Riddell. Western Lettuce. Common; woods and prairies.

Lactuca pulchella (Pursh) DC. Blue Lettuce. Infrequent; roadsides and timothy fields. Probably introduced.

Lactuca spicata (Lam.) Hitchc. Tall Blue Lettuce. Common along borders of woods.

Lygodesmia juncea (Pursh) D. Don. Frequent locally on dry gravelly knolls.

Agoseris cuspidata (Pursh) Steud. Prairie False Dandelion. Mostly on dry knolls and hillsides.

Prenanthes racemosa Michx. (*Nabalus* Hook.) Glaucous White Lettuce. Infrequent on prairies.

Prenanthes alba L. (*Nabalus* Hook.) Rattlesnake Root. White Lettuce. Woods and banks.

Hieracium canadense Michx. Hawkweed. Infrequent in Estherville woods.

ESTHERVILLE, IOWA.